

The University of Chicago

UNUSED RESOURCES AND ECONOMIC WASTE

A DISSERTATION SUBMITTED TO THE FAC-
ULTY OF THE DIVISION OF THE SOCIAL
SCIENCES IN CANDIDACY FOR THE
DEGREE OF DOCTOR OF PHILOSOPHY

DEPARTMENT OF ECONOMICS
1940

By
DAVID ROCKEFELLER

THE UNIVERSITY OF CHICAGO PRESS
CHICAGO, ILLINOIS
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PREFACE

THE scope of the subject chosen for this essay is so vast that it has been necessary to leave out altogether much material which would have enriched it and to write all too briefly on other matters of even greater importance. I have attempted, within the space of a small number of pages, to develop a theory of resource use under the free-enterprise system. To begin with, a simplified set of conditions was assumed. Later in the essay complicating factors were introduced, and their influence on resource use was observed. Throughout the study two considerations were uppermost in my mind: on the one hand, I wished to discover the reasons why fixed resources are sometimes used in production and at other times left idle; on the other hand, I was interested in finding the meaning and cause of economic waste.

So far as I am aware, no other study has been made which has systematically attempted to show the relationship between the problem of unused capital resources and the larger and more significant problem of waste. It is hoped, therefore, that this study will be suggestive and time-saving to some persons interested in problems related to economic welfare even though they may already be familiar with many of the ideas contained in it.

My greatest intellectual debt is to Professor Frank H. Knight, of the University of Chicago, whose writing and teaching have profoundly influenced my thought. I am

most grateful to Professor Jacob Viner and Professor Oskar Lange for invaluable advice and criticism at every stage in the writing of the essay.

I further owe my hearty thanks to Mr. A. P. Lerner, of the University of Kansas City, and to Professor Gerhard Tintner, of Iowa State College, both of whom kindly read the entire manuscript. Each one made numerous suggestions and observations which enabled me to make many improvements in the original text. Finally, I must express my thanks to Professor Friedrich A. von Hayek, of the London School of Economics, who suggested to me the topic. It was also under his guidance that I began work on this study.

While wishing to give full credit to the several persons who kindly gave me assistance and advice, I do not wish to give the impression that they would necessarily agree with and support everything which follows. Responsibility for such errors in thinking or in fact as may still remain is entirely my own.

POCANTICO HILLS, NEW YORK

July 1941

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¹ I am indebted to Dr. Y. K. Wong, of the Department of Mathematics of the University of Chicago, for drawing the diagrams.

CHAPTER I

INTRODUCTION

AFTER ten years of depression in large areas of the civilized world it must be obvious, even to the most confirmed of optimists, that the world is not progressing automatically and uninterruptedly toward utopia. It does not take a college degree, nor yet a high-school diploma, to see and to feel the devastation wrought by unemployment, destitution, political upheaval, and war. But the problem of the social scientist is not to record facts which are already distressingly apparent. Rather, it is to distinguish symptoms from causes; to understand the nature of the economic mechanism; and to predict the probable effect of proposed changes in the social structure.

The essay which follows is a study of waste with special reference to unused capital resources. "Waste" is a word which is used glibly by most of us. From our earliest days we are told not to leave food on our plates, not to allow electric lights to remain burning when we are not using them, and not to squander our money thoughtlessly, because these things are wasteful. In business there is constant talk of waste from inefficient use of time, from careless use of materials, or from poor planning. Of all forms of waste, however, that which is most abhorrent is idleness. There is a moral stigma attached to unnecessary and involuntary idleness which is deeply imbedded in our conscience. Yet few of use stop to con-

sider what it is that makes an action, or failure to act, wasteful. We must have some subconscious standard of judgment, but the standard is rarely made explicit. It is hoped that this essay will shed some light on a criterion of waste. We shall endeavor to demonstrate, moreover, that the term "idleness" is not unambiguous. Even when it can be given a reasonably precise meaning, "idleness" is by no means a synonym for "waste."

The word "waste" in common usage implies that an alternative course of action would be preferable to the one actually pursued. In the opinion of the writer it also implies a realizable alternative—not one which is merely a hypothetical ideal. Of that we shall have more to say in the last chapter. But in order that we may have some basis of comparison in the body of the essay, it seems advisable that we begin our deliberations with a discussion of how resources would be used under "ideal" conditions.

"IDEAL" RESOURCE USE

There is, of course, no absolute sense in which one can speak of the best possible use of resources. Perfection requires a goal. The ideal use of resources in an oligarchy with slavery would be different from ideal use in a military dictatorship where national prestige and military achievement were held in highest esteem. Neither of these ideals would coincide with the ideal for resource use in a democracy.

The democratic ideal, which is the one we shall consider, must be divided into two parts. In the first place, there is the question of an ideal distribution of income

among consumers. This is not to be confused with the second question, which is that of ideal employment and allocation of resources with a given income distribution.¹ For each distribution of income there is a corresponding ideal employment and allocation of resources.

a) The ideal for resource allocation from the viewpoint of consumption, assuming a given relative distribution of income, is based on the following five postulates. (1) Each individual derives satisfaction or utility from the expenditure of his income. (2) Within limits each individual is better able to decide on the relative utility, to himself, of alternative expenditures, than any other person.² (3) An increase in the income of an individual is equivalent to an increase in his satisfaction. (4) A maximum total satisfaction or utility to each individual from the consumption of goods and services is a desirable social objective. (5) Total welfare varies in the same direction with economic welfare; or, more precisely, as long as there is no inverse correlation between economic satisfaction and noneconomic satisfaction, the total welfare of the individual will be augmented when his economic status is improved.³ Leaving aside for the moment the logical and philosophical questions which these postulates bring to mind, it is possible to use them as the basis for a formulation of the ideal.

¹ Ideal employment and ideal allocation of resources may also be considered as two separate problems. For further discussion see chap. ix.

² Exceptions must, of course, be made in connection with minors and persons who are mentally incompetent. Similarly, persons who use habit-forming drugs cannot be considered competent to make decisions for themselves which are in their own best interest.

³ See A. G. Pigou, *The Economics of Welfare* (4th ed.; London, 1932), chap. i.

*Resources are said to be ideally employed and organized (in a democracy where income distribution is given) when no change in their employment or organization could increase the satisfaction of one individual without diminishing the satisfaction of another.*⁴ It will be observed that this formulation avoids the need of making interpersonal comparison of utility and of deciding whether some persons are capable of greater satisfaction than others. Adjustments in the organization of resources would tend to redistribute income; but such changes could, at least theoretically, be offset by taxes and subsidies, which would leave everyone in the same relative position as before the reorganization.⁵

Unfortunately, propositions, such as the above, which have to do with human welfare, necessarily contain terms like "satisfaction" and "utility." These terms conceal a number of highly controversial psychological and philosophical issues. It is assumed, for example, that utility or satisfaction is a psychological reality which motivates behavior in connection with the spending of income. That is to say, every individual is assumed to be interested in spending his income, measured in money, in such a way that he will maximize his utility

⁴ Similar definitions of ideal resource use are suggested by Mr. A. P. Lerner in "The Concept of Monopoly and the Measurement of Monopoly Power," *Review of Economic Studies*, I, No. 3, 162, and by Professor J. R. Hicks in "The Foundations of Welfare Economics," *Economic Journal*, XLIX, No. 196, 701.

⁵ This method of avoiding the comparison of interpersonal utility which has always been raised as an objection to the analysis of Professor Pigou (in the *Economics of Welfare*) was suggested by Mr. N. Kaldor in "Welfare Propositions in Economics," *Economic Journal*, XLIX, No. 195, 549-52, and was further developed by Professor Hicks, *op. cit.*

or satisfaction. Individual consumers are further assumed to have well-defined psychological preference scales which guide them in the disposition of their incomes. There is good reason to doubt that either assumption is universally correct. Nevertheless, alternative generalizations with more universal applicability to human behavior are not easily discovered.

The fifth postulate upon which our formulation of ideal resource use was based states that total welfare moves in the same direction with economic welfare. Here, again, there is room for sound criticism on psychological and philosophical grounds. The welfare of an individual is not easily defined, nor is it a quantity which can readily be summated. Nonpecuniary values compete with economic values, and there is no common unit of measurement.⁶ It seems reasonable to assume, however, that an amelioration in the economic status of most individuals ordinarily results in a net improvement in their well-being.

All economics, and especially welfare economics, is necessarily built on an insecure base to the extent that the behavior of human beings defies generalization and fundamental values defy measurement. Oversimplified assumptions continually compel economists to qualify their assertions. If one were to demand basic postulates in economics as well established as those of chemistry or physics, it would be necessary for economists to confine their attention to the study of economic history.

⁶ Professor Pigou defined the elements of welfare as "states of consciousness" which "can be brought under the category of greater and less" (*Economics of Welfare*, p. 10).

But to abandon economic science because the postulates are not universally accurate would be as foolish as refusing to build a house for fear that the cellar might leak in a storm.

Controversies over the validity of welfare propositions usually have their root in disagreement on one of the basic postulates rather than in the statement of the conditions of the "ideal." Once the foregoing generalizations with regard to human behavior have been accepted, it is comparatively easy to describe the conditions which will exist when the ideal is achieved. Given the relative distribution of income among consumers, resources will be used "ideally" when the productivity of marginal units of each resource is equal in all uses and when each individual has so disposed of his income that he has reached the highest level of satisfaction possible with that income. In a purely competitive price economy (assuming, still, a given relative income distribution) these conditions will both be satisfied when the productivities of marginal units of each resource are proportional to their respective prices in all uses and when the marginal rates of substitution between any two commodities in the budget of every consumer are equal to the ratio of their prices.⁷

Thus, in competitive equilibrium, any shift of a unit of a homogeneous resource from one use to another would cause the marginal value-productivity of

⁷ The formal proof of the validity of these propositions is readily available in the economic literature. See, e.g., Lerner, *op. cit.*, pp. 162-65; E. H. Phelps-Brown, *The Framework of the Pricing System* (London, 1936); and J. R. Hicks, *Value and Capital* (Oxford, 1939), Parts I and II.

the resource in the firm to which another unit was added to be lower than its marginal value-productivity in the firm from which it was removed. Similarly, in equilibrium, a consumer would diminish his total satisfaction by substituting a unit of one commodity for a unit of equal value of any other commodity. In each instance the shift away from the equilibrium condition would also mean a movement away from the ideal as defined above.

The mere statement of the conditions which must be fulfilled if resources are to be used ideally is, of course, insufficient as a guide to policy. It is necessary that the marginal social costs of production be at all times proportional to product prices if the ideal is to be realized. This must be so because, assuming that social values are involved only in consumption and not in the nature or degree of productive activity, the net marginal social cost of producing a unit of commodity *X* is equal to the net social value of an alternative amount of commodity *Y*, which is foregone in order to produce the incremental unit of *X*. If the marginal cost of producing a commodity were less than the price of the commodity, the value-return to the community from the production of an added unit of the commodity would be greater than the cost of producing the added unit. It would, therefore, be desirable to expand output. If, on the other hand, marginal cost were higher than price, the community would be benefited by a contraction of output, since by so doing the net value-product of the community would be increased.

We have been careful to specify net cost and value

to society in our discussion because, as Professor Pigou and others have pointed out, there may be a divergence between individual and social interests.⁸ This is a matter of the utmost importance and needs amplification. Marginal cost to the individual firm includes all the current outlays which are necessary to secure and maintain the services of productive resources used by the enterprise when it is operating at any given level of output. When there is pure competition with constant cost to the industry, and as long as no firm or individual either benefits or injures another firm or individual through its productive activities, marginal social cost coincides with marginal individual cost. If, however, the owner of a fixed resource, or a competing producer, is benefited or injured by the productive activity of an entrepreneur or other individual, then net marginal social cost will be smaller or larger than the marginal cost to the individual, depending on the magnitude of the benefit or injury. Factory chimneys emitting sooty smoke in an urban area, or concerns polluting the water of a publicly used river, are stock instances of costs which are borne by the community but not by the firm. Research laboratories connected with industrial concerns, on the other hand, may increase the net product of the community without imposing an additional burden on the individual firm.

As a special case of the above it may happen that the marginal social net product will differ from the marginal private net product when an industry (as distinguished

⁸ See Pigou, *op. cit.* (especially chaps. ix and x), and R. F. Kahn, "Some Notes on Ideal Output," *Economic Journal*, XLV, 1 ff.

from a single plant or firm in the industry) is subject to increasing or diminishing returns resulting from external economies or diseconomies of large production.⁹ When there is "full" employment and pure competition in both the commodity markets and resource markets, however, the divergence between the marginal social and private net product will be negligible. Most external economies of large production result from internal economies in other industries.¹⁰ External diseconomies of large production are likely to be pecuniary (e.g., the rising price of raw materials as an industry expands), in which case the social loss to producers and consumers is offset by the gain to the owners of the raw materials. If the diseconomies are technical (as opposed to pecuniary), there may be a genuine discrepancy between the social and private net product. But technical diseconomies of large production will only occur when a number of entrepreneurs are jointly exploiting some unappropriated resource subject to exhaustion, such as a fishery or grazing land; or subject to too intensive exploitation, as in the case of an inland water way. The marginal social and private net product would ordinarily be the same whether the resource were appropriated either pri-

⁹ See Kahn, *ibid.*, and Pigou, *op. cit.*, chap. xi. For a definition and discussion of external economies and diseconomies see Jacob Viner, "Cost Curves and Supply Curves," *Zeitschrift für Nationalökonomie*, Band III, Heft 1, 30-42.

¹⁰ See Frank H. Knight, "Fallacies in the Interpretation of Social Cost," reprinted in *The Ethics of Competition* (New York, 1935), pp. 228-30. A possible external economy which is not associated with an internal economy somewhere else is the development of a larger and more reliable supply of skilled labor as a result of an expanding industry (Gottfried von Haberler, *The Theory of International Trade* [New York, 1936], p. 206).

vately or publicly, providing a rent were charged which would maximize the aggregate returns of the resource.¹¹

To list the instances where, in pure competition, the marginal private net product differs from the marginal social net product is virtually equivalent to demonstrating their equality, for the instances which may be cited are relatively unimportant. It may be stated with confidence, therefore, that the theoretical social ideal of resource use will substantially be satisfied when private entrepreneurs, acting in their own best interests, buy from and sell to competitive markets. In cases where there is an appreciable discrepancy between private and social interests the discrepancy could be rectified through suitable taxes and subsidies.

b) A criterion of ideal income distribution is far more difficult to formulate objectively than the criterion for the ideal employment or allocation of resources which has just been discussed. In the first place, it must be recognized that consumption is not the only means by which wants are satisfied. To the extent that individuals take pleasure in "work," or that they derive satisfaction from ascetical and puritanical abstinence from the consumption of goods and services, or that they prize other noneconomic values (values which cannot be measured in money) more highly than economic values, income consumption is an inadequate measure of welfare. Secondly, in deciding on an ideal distribution of income it is necessary to make interpersonal comparisons of satisfaction, which cannot be done with certainty

¹¹ See Knight, *op. cit.*, pp. 219-25, and Jacob Viner, *Studies in the Theory of International Trade* (London, 1937), pp. 478-82.

or accuracy since there is no purely objective method of making such comparisons.¹²

In the absence of further information we may reasonably assume that some degree of equality in income distribution is preferable to extreme inequality. This is plausible since there is no conclusive evidence that people with large incomes are capable of greater or less satisfaction than people with small incomes. Equal distribution, therefore, may be supposed to offer the best chances of maximizing total satisfaction unless there are other offsetting factors to be considered. The underconsumptionists, of whom Mr. Keynes is one of the most able of the modern exponents, fortify the argument for equal income distribution with the concept of the marginal propensity to consume.¹³ They maintain that the marginal propensity to consume is a diminishing function of income. Investment and employment, on the other hand, are increasing functions of the marginal propensity to consume. Thus, other things equal, a greater equality of income distribution would be desirable because it would increase the marginal propensity to consume, which, in turn, would stimulate (and presumably make more ideal) employment and investment.¹⁴

These two arguments establish a strong presumption in favor of equal income distribution, but they are by no

¹² See Lionel Robbins, "Interpersonal Comparisons of Utility," *Economic Journal*, LXVIII, No. 192, 635-42.

¹³ J. M. Keynes, *The General Theory of Employment, Interest and Money* (New York, 1936).

¹⁴ See Oskar Lange, "The Interest Rate and the Optimum Propensity To Consume," *Economica*, Vol. V (new ser.), No. 17.

means conclusive. Before passing final judgment it is important to know the effect of equality of income on the incentive to work, to save, to incur risk in investing, and hence on the rate of investment and production. There is further the question as to the correlation between economic income and noneconomic values, including power. If, for example, the equalization of economic incomes necessitated great inequalities in political power, it might well be questioned whether the change was a desirable one, for there is no way of telling how the power would be used. Thus a criterion for the ideal distribution of income is more a social than an economic problem.

ON THE NATURE OF PRODUCTIVE CAPACITY

Waste is manifestly more than an economic problem; but many of the most conspicuous forms of waste are associated with the process of producing, distributing, and consuming economic goods and services. Since, in this essay, we propose to devote much of our attention to the relationship between waste and unused capital resources, it is necessary that we start with a reasonably clear understanding of the nature of the productive process and of productive resources. This section will set forth the point of view of the writer on certain controversial questions in the theory of production which have a bearing on the remainder of the essay. It will explain terminology which, without adequate comment, might lead to confusion at a later stage in the argument.

THE PROCESS OF PRODUCTION

To what process do we have reference when we speak of "production" in economics? It is known from the law of the conservation of energy that energy can neither be created nor be destroyed. Production, therefore, cannot refer to the creation of new energy. It must refer to the liberation of potential energy or to the harnessing of kinetic energy. Natural forces, such as the radiation of energy by the sun, constantly bring about changes in the composition of matter on the earth. But production in the economic sense certainly does not refer to these changes except in so far as they are directed by man.

Presumably, when we speak of "production" we have in mind changes in spatial relationships, the liberation or harnessing of energy, or chemical and physical changes in matter, which are implemented in some manner by purposive human activity. Production means the rendering of services to human beings as consumers. Specifically it is want-satisfying activity. The productive services rendered must have value in the sense that they must be alternative to, or exchangeable for, other goods or services.¹⁵ The services rendered by "free goods" are not produced in the economic sense.

If production means the rendering of want-satisfying

¹⁵ This does not at all imply that there would be no production in a Crusoe economy. The services which Crusoe would produce would have value because they would be alternative to other services which he would have produced had he spent his time differently. Similarly, services produced for home production are just as much produced as those which are produced for the market.

services, then productive capacity must be the source of such services. A "productive resource" may be defined as any agency capable of rendering a valuable service or stream of services.

The durability of a resource is determined by the length of the period over which it is capable of rendering a particular kind of productive service at a given rate. The durability of some resources is great. Hospital radium, for example, would only wear out after a very long period of use. Other resources are so short lived that it is difficult, in practice, to distinguish them from the services performed. Most food, fuel, and the like fall into this category. It is not useful to differentiate resources from the services which they render when the resources are highly perishable.¹⁶

The term "production" has sometimes led to misunderstandings in economic discussions because it commonly refers to three related, but not identical, processes. The basic meaning of "production," as we have just seen, is the entire process of rendering valuable services to consumers.¹⁷ But the word "production" is also used in a more restricted sense to describe the process of investment in productive resources. This, in turn, has a dual meaning. On the one hand, production involves the maintenance and replacement of resources such that a given income stream may be perpetuated. On the other hand, it signifies adding to the stock of resources

¹⁶ Cf. F. H. Knight, "The Quantity of Capital and the Rate of Interest," *Journal of Political Economy*, XLIV, No. 4, 455-56.

¹⁷ Cf. F. H. Knight, "The Ricardian Theory of Production and Distribution," *Canadian Journal of Economics and Political Science*, I, No. 1, 4-5.

so as to swell the income stream in the future.¹⁸ The production of resources, whether they are produced to replace the existing stock or to add to it, is an intermediate step in the process of producing consumer goods and services. As long as it is kept in mind that the word "production" is not always used in the same sense in common usage, there is no reason why confusion should arise.

PRODUCTIVE RESOURCES

From the time of Adam Smith's successors up until quite recently it was customary for "orthodox" economists to speak of the three "factors" of production—land, labor, and capital. Natural resources were often included in the same category with land. This division was originally based on the social organization in England at the end of the eighteenth century. The three great social and political classes were the workers, the landowners, and the "capitalists" (manufacturer-entrepreneurs). It was convenient to assign to each class a definite part in production, in return for which each received a special kind of income. Wages and profit (interest) were said to be fixed in aggregate, but the capitalists were supposed, more or less arbitrarily, to decide how much the wages of labor would be. Rent was a residual, or surplus, paid to landowners out of revenue after capital and labor had received their combined share.¹⁹ This tripartite division was most appealing in its simplicity, and for several generations it remained

¹⁸ *Ibid.*, pp. 10-11.

¹⁹ Knight, "The Ricardian Theory of Production and Distribution," *op. cit.*, I, No. 2, 178-96.

unchallenged. It could only have had validity, however, if it were assumed that land has but one use and is homogeneous, that labor and capital are also homogeneous but easily transferable from one use to another, and that capital is produced solely by homogeneous labor invested in it over time.

These assumptions were unrealistic even in the agrarian economy of the eighteenth century. They bear even less relation to reality in modern industrial economy.

Without becoming embroiled in the current controversy over the classification of productive resources²⁰ it is fitting that some comment be made on usage in this essay with respect to these terms.

The value of all resources bought and sold in the market tends to be determined by the discounted value of the services which the resources are expected to render in the future. This means that investment in the various resources which are available for lease or for sale tends to be carried to the point where the cost of a marginal unit of investment just equals the expected return from the marginal unit. *All resources in which investment and disinvestment can be planned with reasonable accuracy are referred to as "capital resources" in this essay.*

There are two principal classes of resources which do not fall under the heading of "capital" in this defini-

²⁰ See N. Kaldor, "Annual Survey of Economic Theory: The Recent Controversy on the Theory of Capital," *Econometrica*, Vol. V, No. 3 (see especially references to previous articles on the same subject in the first three footnotes); F. H. Knight, "On the Theory of Capital: A Reply to Mr. Kaldor," *Econometrica*, Vol. VI, No. 1; Kaldor, "On the Theory of Capital: A Rejoinder to Professor Knight," *Econometrica*, Vol. VI, No. 2.

tion. The most important of these is labor in a nonslave economy. Labor cannot be bought and sold in the market in most civilized countries of the present-day world. Contracts involving human service are ordinarily not enforceable at law even though suits for damage may be instigated for breach of contract. Thus it is impossible to invest in labor in the same sense that one may invest in capital resources. Nevertheless, it must be observed that this distinction between capital and labor is largely social and institutional rather than theoretical-economic, for in a slave economy the slaves would have to be classified as capital. Even in a nonslave economy the investment in education and special skills by parents in their children, or by individuals in themselves, is analogous to investment in capital. Usually, however, there is no close correlation between outlays and expected return.²¹

The other class of resources which would not properly fit into our definition of capital includes "natural agents" which are not exploited according to a systematic investment program. Many exploratory and speculative mining ventures come under this heading. On the other hand, when mineral deposits of known dimensions are exploited, they would be classed as capital, since their exploitation could be undertaken according to the cost principle.²² Rent accruing to the owners of an intramarginal mineral deposit may be likened to the

²¹ See Knight, "The Quantity of Capital and the Rate of Interest," *op. cit.*, p. 438, and "The Ricardian Theory of Production and Distribution," *op. cit.*, pp. 16-17, 20.

²² See Knight, "On the Theory of Capital: A Reply to Mr. Kaldor," *op. cit.*

rent accruing to the owners of machinery. The owners of both kinds of resources would keep capital accounts.

Our classification does not adhere to the traditional distinction between capital and land (including natural resources) because, for our purposes, the economic, rather than the physical, characteristics of resources are important. To the extent that "natural resources" or "land" are consciously invested in and maintained at cost, they are most usefully grouped with other capital resources which they resemble economically.

Specific capital resources do not possess or lack qualities such as durability, flexibility, mobility, or augmentability in any absolute sense. These qualities have meaning only in connection with particular situations and relative to specified intervals of time. They are qualities which, as we shall see in chapters iii and iv, are tremendously important in conditioning resource use, but they do not pertain to specific types of physical resource in such a manner as to permit a useful subclassification of capital resources based on their presence or absence.

CHAPTER II

STUDIES OF UNUSED RESOURCES AND WASTE: A HISTORICAL REVIEW

PRE-WAR INTEREST IN UNUSED RESOURCES

UNTIL very recently interest in unused productive capacity was confined to "unorthodox" economists. The two groups which have been conspicuously conscious of the problem are the protectionists and the underconsumptionists.

The mercantilists, as early as the fifteenth century, advocated protection and an export balance in order to increase employment.¹ "The stress on employment," according to Professor Jacob Viner, "led to an appraisal of exports not merely in terms of their value, or their value relative to imports, but in terms of the amount of labor they represented."²

Some writers spoke of the "balance of labor," by which they meant the amount of labor involved in exports relative to the labor involved in imports. Professor Viner points out that "on this basis, a given trade balance measured in money would have to be regarded as more favorable the lower the prices at which English exports were sold and the lower the wages earned by English labor engaged in their production."³

¹ Eli F. Heckscher, *Mercantilism*, trans. Mendel Shapiro (London, 1935), II, 121.

² Jacob Viner, *Studies in the Theory of International Trade* (London, 1937), p. 52.

³ *Ibid.*, p. 54.

The mercantilists held that protection tends to stimulate the re-employment of unemployed resources (especially unemployed labor).⁴

The employment argument for protection has continued to find supporters right down to the present time.⁵

The underconsumptionists' theory that unemployment is created by a deficiency of purchasing power was developed somewhat later than the protectionists' argument. Malynes, a mercantilist writer, said in 1601 that an influx of precious metals leads to higher prices, which, in turn, is stimulating to employment. John Law (1795) justified his paper inflation policy on the ground that it was necessary in order to pay the wages and set people to work.⁶

The celebrated controversy started by the publication of Sismondi's *Nouveaux principes d'économie politique* (1819) temporarily made unemployment a live issue in France and England. Sismondi maintained, in opposition to Say,⁷ Ricardo, and James Mill that general overproduction and unemployment are possible over an

⁴ Heckscher, *op. cit.*, II, 122. Also in the interest of increasing employment, Petty, writing in 1662, maintained that it would be better to burn the products of one thousand men than to allow them to lose their skill by remaining unemployed (*ibid.*, p. 124). Such an idea does not sound so strange in America today as it might have ten years ago.

⁵ For a full discussion of the modern controversy see Gottfried von Haberler, *The Theory of International Trade* (New York, 1936), pp. 259-68.

⁶ Heckscher, *op. cit.*, II, 125.

⁷ J. B. Say, in his *Traité d'économie politique* (1803) said that "the total supply of products and the total demand for them must of necessity be equal, for the total demand is nothing but the whole mass of commodities which have been produced" (Gide and Rist, *A History of Economic Doctrines*, trans. R. Richards [2d ed., rev.; Boston, 1913], pp. 115-16). He believed that general overproduction is impossible since money is but a "veil" which conceals

indefinite period of time. He was supported in his contention by Malthus. But their arguments were often confused and faulty, so that the "classical" economists won at least a temporary victory.

The first authors really to understand the fact that money may be more than a "veil" covering the inevitable forces of the supply and demand which caused products to be exchange for products were the Attwood brothers. "A scarcity of money," said Mathias Attwood in 1823, "makes an abundance of goods. . . . Mr. Tooke, and Mr. Ricardo, will find in this obvious principle an exposition of many of the difficulties and inconsistencies in which they have involved the subject."⁸ A few years later his brother Thomas asserted that

money is as necessary to constitute price, as commodities: increase the supply of money, and you increase the demand for commodities; diminish the supply of money, and you diminish the demand for commodities. The supply of commodities is the demand for money, and the supply of money is the demand for commodities.⁹

Underconsumption theories have continued to crop up ever since. Many of them have been hopelessly crude and entirely false.¹⁰ But some recent versions have been

the fact that "products are given in exchange for products" (*ibid.*, p. 115). See also Paul N. Rosenstein-Rodan, "The Co-ordination of the General Theories of Money and Price," *Economica*, August, 1936, and Alvin Hanson, *Business Cycle Theory* (Boston, 1927), chaps. ii and iv.

⁸ Mathias Attwood, *Letter to Archibald Hamilton*, quoted in Viner, *op. cit.*, p. 199.

⁹ Thomas Attwood, *The Scotch Banker*; also quoted in Viner, *op. cit.*, p. 199.

¹⁰ For critique of some of these theories, see Gottfried von Haberler, *Prosperity and Depression* (Geneva, 1939), chap. v; E. F. M. Durbin, *Purchasing Power and Trade Depression* (2d ed., rev.; London, 1934); Hanson, *op. cit.*

expounded with subtlety and refinement by distinguished economists.¹¹ They undoubtedly contain a large measure of truth for the short run or when the economy is in disequilibrium. This fact was overlooked for a long time by "orthodox" economists.

The failure of "orthodox" economists to devote adequate attention to unemployment and trade cycles is easily explained. "Orthodox" price theory at the most general level of analysis assumes a perfectly competitive market with flexible prices and "neutral" money. This would have been all right if they had subsequently proceeded to a more realistic analysis, but unfortunately there has been a tendency to stop there or else skimp the later stages.

Given these oversimplified assumptions with respect to competition, prices, and money, unemployment and overproduction would indeed be impossible, as Say rightly maintained. Similarly, the proposition that deviations from the equilibrium are temporary aberrations unworthy of extended study no longer seems quite so fantastic, granting these assumptions. Nevertheless, one cannot but be astonished to find as distinguished an economist as Alfred Marshall devoting less than ten pages of his monumental *Principles of Economics* (in the 8th ed. [1930]) to the consideration of unemployment and the trade cycle. He concedes that "inconstancy of employment is a great evil and rightly attracts public

¹¹ J. M. Keynes, *The General Theory of Employment, Interest, and Money* (New York, 1936); R. F. Harrod, *The Trade Cycle* (Oxford, 1936).

attention. "But," he says, "several causes combine to make it appear to be greater than it really is."¹²

Up until the first decade of the present century virtually no scientific attempts had been made to analyze the causes either of unemployment or of the trade cycle in either England or America.¹³

In 1909 there appeared two empirical studies in English whose importance in political and economic thinking have persisted. The first was the *Minority Report of the Poor Law Commission*, written largely by Mr. and Mrs. Sidney Webb. The second was Sir William Beveridge's *Unemployment: A Problem of Industry*. Among the early contributions to the theory of business cycles are Schumpeter's *Theorie der Wirtschaftlichen Entwicklung* (1911; trans. into English in 1934), Baranowski's *Les Crises industrielles en Angleterre* (English ed., 1913); Aftalion's *Les Crises périodiques de surproduction* (English ed., (1915), and Mitchell's *Business Cycles* (1913). But when we have mentioned these few works we have mentioned practically all the books of any importance on either subject written before the war. The great body of the countless books which now exist have been written in the last fifteen years.

So far as the present writer is aware, all the pre-war studies of unused capacity dealt solely with unem-

¹² Alfred Marshall, *Principles of Economics* (London, 1930), p. 687. Later he asserts that "there seems to be no good reason for thinking that inconstancy of employment is increasing on the whole" (*ibid.*, p. 688).

¹³ The earlier contributions of protectionists and underconsumptionists were almost universally unsystematic and inadequate. There were, however, a few studies of some importance in German and French.

ployed labor. A cursory survey of the literature gives the impression that little more than passing reference was made to idle capital resources.

RECENT STUDIES OF WASTE DUE TO UNUSED RESOURCES

Since the World War a number of factors have caused economists and public officials to marshal their forces in an unprecedented campaign of inquiry into the causes of unemployment and industrial waste. The "twenties" in the United States were characterized by an extraordinary interest in business efficiency. Taylorism and other scientific-management schemes which had met with mild success before the war became the order of the day. Efficiency experts, personal managers, and cost accountants made industry conscious of waste in a way that had never been so before. Government and private agencies collected and made available statistics on production which, for the first time, made it possible for students to familiarize themselves with the details of industrial organizations.¹⁴ In England problems arising out of the newly inaugurated systems of unemployment, health, and old-age insurance necessitated the collection of better employment statistics. The League of Nations, through its various economic bureaus, made invaluable contributions through the assembling and standardizing of world-statistics on employment and production. Finally, the great depression has given tremendous impetus to business-cycle research which inevitably has

¹⁴ E.g., the Bureau of Labor Statistics; Census of Manufactures; National Industrial Conference Board; *Federal Reserve Bulletin*.

meant a redoubled interest in idle resources. In Great Britain and the United States the entire emphasis in economic thought has shifted from static equilibrium analysis to a study of the causes of economic change.

Prolonged depression, together with vanishing economic frontiers and the shrinking of world-markets, have engendered fears, on the one hand, for the future of investment opportunities in the United States and, on the other hand, that our natural resources may be in danger of exhaustion. Productive capacity has, therefore, been investigated in terms of secular trends as well as cyclical variations. Conservation programs have been offered along with plans to increase purchasing power and make fuller use of existing capacity. For the first time, there have been systematic efforts to determine the extent to which idleness exists in resources other than labor.

In 1932 President Hoover's Research Committee on Social Trends in the United States included a chapter in their report on the use of natural resources.¹⁵ In 1934 the Columbia University Commission on Economic Reconstruction obtained an estimate of our unused capital resources from a questionnaire sent out to numerous engineers and businessmen.¹⁶ In the same year the Brookings Institution undertook the ambitious task of determining the amount of "excess" productive capacity which existed in the United States in 1929.¹⁷ Also, in

¹⁵ *Recent Social Trends in the United States* (New York, 1933).

¹⁶ *Economic Reconstruction* (New York, 1934).

¹⁷ Edwin G. Nourse and Associates, *America's Capacity To Produce* (Washington, 1934).

the same year the New York City Housing Authority sponsored a "National Survey of Potential Product Capacity," the objective of which was to discover the "capacity of existing plant if production were limited solely by physical factors."¹⁸ Finally, the National Resources Committee has made a study of "Patterns of Resource Use" (1939), which endeavors to predict where industrial bottlenecks would occur should the level of our national income be raised. The method of all of these studies has been empirical and quantitative.¹⁹

A growing interest in unused capital resources is noticeable among "theoretical" economists as well as among the writers of these several statistical studies. Professor J. M. Clark was the first economist to write systematically in English on unused capital resources.²⁰ Professor Edward Chamberlin brought to light an interesting kind of "excess" capacity which may be created by monopolistic product differentiation.²¹ Professor F. A. von Hayek has discussed the "excess" capacity which develops because of technical progress.²² Nearly all recent business-cycle theorists have dealt with unused capacity in connection with the cycle.²³ Cost theorists

¹⁸ *Report of the National Survey of Potential Product Capacity* (New York, 1935), p. xiv.

¹⁹ See chap. viii for a more detailed discussion.

²⁰ *The Economics of Overhead Costs* (Chicago, 1923).

²¹ *The Theory of Monopolistic Competition* (Cambridge, 1933). See chap. vii for further discussion.

²² "Technischer Fortschritt und Uberkapazität," *Oesterreichischer Zeitung für Bankwesen*, Band I, Heft 1/2.

²³ J. M. Keynes in *The General Theory of Employment, Interest, and Money* has sought to demonstrate that there may be stable equilibrium with unemployed resources, but he is primarily concerned with unemployed labor.

have interested themselves in an "optimum" use of capacity in terms of cost analysis. Professor W. H. Hutt has recently undertaken a comprehensive classification of idle resources in his book *The Theory of Idle Resources* (1939).²⁴ In fact, on all sides there is evidence that unused productive capacity has become a living issue.

TWO METHODS FOR DETERMINING THE WASTES OF UNUSED CAPITAL RESOURCES

Virtually all inquiries into unused resources have been motivated by the belief that idleness is wasteful and by the hope that something could be done to eliminate this waste. Unemployment of labor has been deplored chiefly because of the destitution and suffering which are likely to result from it. Unused capital resources are more frequently condemned on the ground that they represent available, but untapped, means of augmenting the national dividend and hence of furthering the public welfare. To this extent economists are in substantial agreement. Controversy arises over the question of what kinds and degrees of idleness are wasteful. The answers to these questions vary according to the assumptions and social philosophy of the investigator. We shall not attempt, in this essay, to study the types and causes of unemployment. Many able studies of this problem have been made in the past. Our attention will be confined to inquiring into the significance of unused capital resources and to ascertaining when and to what extent they are wasteful.

The authors of most empirical studies of unused capacity have held that some standard conception of a

²⁴ For further discussion see Appendix.

technically "efficient" use of plant should be made the criterion of "optimum" use. It is usual for these writers also to accept some version of the underconsumptionist explanation of "disequilibrium." In other words, they believe that there is some inherent leakage of purchasing power in the economic fabric of the system which is primarily responsible for inefficient resource use. They all agree that purchasing power must be increased, but they are not in accord as to method.

Those authors who believe that the enterprise economy should be perpetuated are inclined to believe that the elimination of wasteful idleness would require monetary inflation through deficit financing during depressions, together with a relatively mild redistribution of income and wealth through progressive taxation of income and inheritance to prevent "excessive" saving. The Brookings study falls into this category.²⁵ These writers do not anticipate that such measures would bring about an immediate and drastic improvement of welfare, but they do suggest that if measures of this sort had been adopted the national dividend could probably have been increased by 20 per cent even in a prosperous year, such as 1929.

More radical authors refuse to accept the present order as a datum. Pointing to the urgency of human needs, they assert that drastic, but not impossible, action must be resorted to in order to satisfy those needs. The "National Survey of Potential Product Capacity," for example, maintains that with existing capacity it would

²⁵ Nourse and Associates, *America's Capacity To Produce* and its three companion volumes (see chap. viii).

have been possible even in 1929 very nearly to have doubled our income. To do so, however, they say it would have been necessary to remove "taboos" which confine us to the production of goods which "can be exchanged for token wealth."²⁶ In order to eliminate wasteful idleness, these authors tell us that drastic redistribution of income would be necessary and that three shifts per day would be required in some industries, and it is implied that most production and consumption would require a certain amount of "guidance" by the government in order to insure the production of "sound" goods which would satisfy the "real needs" of the community.²⁷

"Theoretical" economists (as distinguished from economists placing primary emphasis on statistics and technology) have, for the most part, taken an entirely different tack. They have asserted that physical considerations contribute to the determination of an "optimum" use of capacity only in so far as they influence cost. The real goal of production-planning, they say, should not be the technical efficiency of a particular machine but rather the long-run minimization of average cost for the firm. It is pointed out that, owing to economies of large-scale production, unit costs will diminish up to a certain rate of output for the purely competitive firm even though a long-enough time is allowed to elapse so that all desirable changes can be made in fixed plant (technology and the expectations of the entrepreneur remaining unchanged). Production beyond that rate of output

²⁶ *Report of the National Survey of Potential Products Capacity*, p. 239.

²⁷ For a more detailed account see chap. viii.

will be at increasing unit cost because managerial supervision becomes more difficult, more costly, and less efficient when organization is highly complex. Thus, technical economies of large scale must ultimately be offset by increasing costs of management and by an increasing risk factor.²⁸ The long-run average cost curve, therefore, must be U-shaped²⁹ (see *LAC* in Fig. 1 [p. 34]). Providing a firm is in long-run equilibrium, it may be said that unused capacity exists when production takes place at a point to the left of the minimum point on the short-run average cost curve. Similarly, when production takes place to the right of the minimum point, output is said to be excessive for the firm in question.

Economists proposing such a criterion for "optimum" use of capacity would be the first to point out that it is valid only if it is assumed that there is perfect competition; that the existing income distribution is desirable; and that human tastes, the state of technical knowledge, and the quantity of resources available are stationary. It is our contention, however, that neither this nor the definition of "optimum" resource use based on technical efficiency are helpful as a guide to policy.

²⁸ The importance of increasing risk as a factor limiting the expansion of the firm is stressed by Professor J. H. Hicks, who says: "As the planned size of the firm increases, the possible losses become steadily greater; and people will usually become less and less willing to expose themselves to the change of such losses" (*Value and Capital* [Oxford, 1939], p. 200). See also M. Kalecki, *Essays in the Theory of Economic Fluctuations* (London, 1939), pp. 98-102.

²⁹ It is assumed that the firm is an insignificant part of the industry and that resource and product prices remain constant as output increases (Jacob Viner, "Cost Curves and Supply Curves," *Zeitschrift für Nationalökonomie* 1931.)

REASONS FOR DISCARDING BOTH METHODS

"Efficiency" is a relative, not an absolute, term. "Technical efficiency" can only have meaning in reference to the proportion of energy (used in any process) which is transformed in the desired direction.³⁰ Thus, the efficiency of an incandescent bulb is the ratio of light to heat plus light. The efficiency of a coal furnace is the ratio of heat added to the water to the total heat produced by the perfect combustion of the fuel. One hundred per cent efficiency, in this sense, is never possible, although it may be closely approximated in some processes, such as the electrolysis of water. The degree of efficiency is always a variable which is controllable within limits, at a cost. Most mechanical devices have a range of outputs over which efficiency is a maximum. This range of maximum efficiency is bounded at both ends by ranges of sharply declining efficiency. In economic terms, unit costs successively decline rapidly, flatten out, and then rise sharply as a piece of equipment is more intensively used. The rated capacity of a machine does not refer to any rate of production which is limited absolutely. Rather, it refers to the point at which efficiency begins rapidly to decline; or, obversely, to the point at which unit costs rise steeply. But even the slope of the curve of efficiency or of the average cost curve is, to a degree, controllable. Steam boilers can be built so that they have a V-shaped cost curve, or a cost curve shaped like a flattened U. The flexibility of a boiler is a function of its cost of production. Where the

³⁰ Professor J. M. Clark defines efficiency as "a proportion between things you want and things you do not want" (*op. cit.*, p. 114).

demand for steam is relatively constant, a less expensive boiler with little flexibility is satisfactory. If the demand for steam is irregular, costs will be minimized by buying a more expensive boiler with greater flexibility.³¹

It is misleading, therefore, to speak of a "technical optimum" even in connection with a particular machine. It is positively wrong to speak of the "technical capacity" of an entire plant where the prices of the raw materials, labor, and equipment, as well as product prices, play an even more important role in determining the desirable degree of utilization of the fixed equipment. One can only say that with given prices of variable resources and given fixed equipment there will be one or more determinate rates of output at which unit cost will be minimized. A change in the prices of the variable resources may mean that existing fixed resources should be used more or less intensively, or it may mean that new types of fixed equipment should be substituted for the old.³² A sharp rise in the price of coal, for example, may compel a power company to replace old boilers with new and more efficient ones (perhaps burning oil), even though the old boilers would have been retained several years longer had the old price of coal persisted.

Technical efficiency, in a plant which is interested in maximizing economic efficiency, controls the degree to which a resource is used only indirectly through its in-

³¹ Cf. George Stigler, "Production and Distribution in the Short Run," *Journal of Political Economy*, June, 1939.

³² For mathematical formulations of the above propositions see R. G. D. Allen, *Mathematical Analysis for Economists* (London, 1938), chap. viii, and Erich Schneider, *Theorie der Production* (Vienna, 1934), pp. 22-61.

fluence on cost. Economists have been quite justified, therefore, in rejecting as meaningless any purely technical measure of unused capacity.³³

The functional relationship between cost changes and changes in the output of a firm having a fixed plant, such as factory buildings and machinery, is readily illustrated by the use of a diagram. In Figure 1 cost changes are measured along the vertical co-ordinate, and changes in output are measured along the horizontal co-ordinate. The curves in the diagram represent two types of relationship. Some of the curves indicate the rate at which total cost changes as the output of the firm increases. These are marginal cost curves and are labeled either *LMC* or *SMC*. Another set of curves indicates the changes in cost per unit of output as the output of the firm increases. These are average cost curves and are labeled either *LAC* or *SAC*. In Figure 1 perfect competition is assumed, so that demand is represented by a horizontal straight line labeled *D*, which indicates that the firm can sell an indefinitely large quantity of output at the price *OP*. The entrepreneur, in seeking to maximize profit, will expand output in the short run to the point where marginal cost (*SMC*) is equal to price (*D*). In the long run he will wish to equate both short- and long-run marginal cost (*SMC* and *LMC*) with price. Marginal, rather than average, cost should be of interest to the entrepreneur because, so long as he can produce an additional unit of output at a cost lower than the price which he can get for it, it will be profit-

³³ In point of fact, even those studies which claim to give a measure of "technical" unused capacity have, in reality, allowed cost considerations to enter into their estimates (see chap. viii).

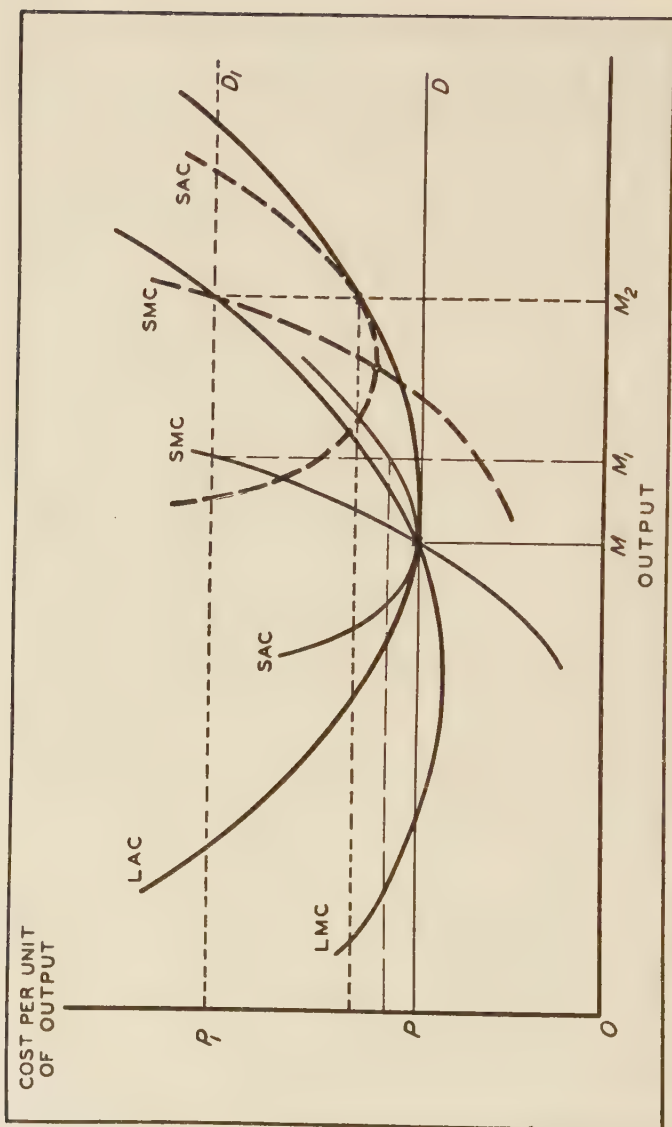


FIG. 1.—Output of the firm under pure competition with and without free entry to the field

able for him to expand output. Average cost will not help him, since it may be higher or lower than the cost of producing an additional unit. Thus the minimum point on the long-run average cost curve (LMC in Fig. 1) must also be discarded as a criterion of "optimum" plant utilization.³⁴ The "rational" entrepreneur would only produce at a volume of output corresponding with the minimum point on the long-run average cost curve (OM in Fig. 1) with the corresponding "optimum" plant if by chance marginal revenue and marginal cost were equal at that point as well (see chap. iii). Such a situation would, indeed, occur in a stationary economy with pure competition and free entry to the competitive field. But even then the equation of long-run average cost and price would be an incidental accompaniment to the equation of price (demand) and marginal cost. It would not indicate a causal relationship.³⁵

The long-run average cost curve for a particular firm at a given moment of time is the envelope curve for a very large number of short-run curves, each of which is tangent to the envelope curve at one point (see Fig. 1). The short-run curves are U-shaped because, as increasing quantities of the variable resources (assuming that the prices of the resources remain constant) are applied to a resource which is fixed in the short run,

³⁴ Standard accounting practice provides the entrepreneur with average, rather than marginal, cost data. For that reason accounting is less helpful than it should be in helping business planning (see pp. 103 ff.).

³⁵ See A. P. Lerner, "Statics and Dynamics in Socialist Economics," *Economic Journal*, XLVII, 263. For an excellent discussion of the assumptions behind cost and demand curves and of their geometry see Joan Robinson, *The Economics of Imperfect Competition* (London, 1934).

unit costs will first diminish and then increase in consequence of the general law of proportions or of increasing and decreasing returns. The long-run marginal cost curve will intersect each short-run marginal cost curve at a point on a vertical line directly below or above the point at which its average curve is tangent to the long-run average curve.³⁶ The entrepreneur will seek to produce any output with the short-run plant whose average cost curve is tangent to the envelope curve at that output, for by so doing he will minimize his costs (see chap. iii). If there is a sudden upward shift in demand (e.g., if D moves to D^1), however, it will be necessary for him temporarily to operate at a point on his short-run marginal cost curve which is above the envelope curve. It will be to his advantage to produce the output OM_1 and sell it at the price OP_1 (Fig. 1). In the longer run, if free entry to the field is for some reason restricted and demand increases, he will produce at the point where both long- and short-run marginal costs equal price and where short-run average cost equals long-run average cost once more. This situation is represented by a firm whose cost curves are indicated by dotted lines in Figure 1. Such a firm will sell the output OM_2 at the price OP_1 . But the points of tangency will not be the minimum points on the short-run average cost curve. The short-run average cost curve will only touch the envelope curve at its minimum point in a purely competitive stationary society where there is free access to

³⁶ The intersection will be below the point of tangency if the long-run average cost curve is falling, and above the point of tangency if the long-run average cost curve is rising.

the field of competition. If we imagine a changing society, where there is still pure competition but where costs and demand fluctuate, a firm may seldom or never produce at its long-run "optimum." It may, nevertheless, in the light of available information and within the limits of possible plant adjustment, produce at all times that output which will be most advantageous to it (see chap iv). But under these circumstances production at the so-called "optimum" point will usually not be the most favorable position for the firm. This is a contradiction of terms, since "optimum" is merely another way of saying "most favorable position."

In a stationary society where individual firms are conscious of the fact that changes in their own output will have an appreciable effect on price (i.e., where there is some degree of monopoly) but where there still is no restriction on entrance to the competitive field, production for the individual firm will *always* be in equilibrium at an output *other* than the "optimum" output. This situation is illustrated diagrammatically in Figure 2. The cost curves are similar to the cost curves in Figure 1, but the demand curve for the semimonopolist slopes negatively instead of being horizontal as in the case of the perfect competitor. For the sake of simplicity we have assumed that demand is a linear function of output, so that the demand curve is a straight line.

The demand curve, looked at from another viewpoint, is also the average-revenue curve. When average revenue is constant as output increases (as in Fig. 1), marginal revenue is the same as average revenue. When demand decreases as output increases, however, the

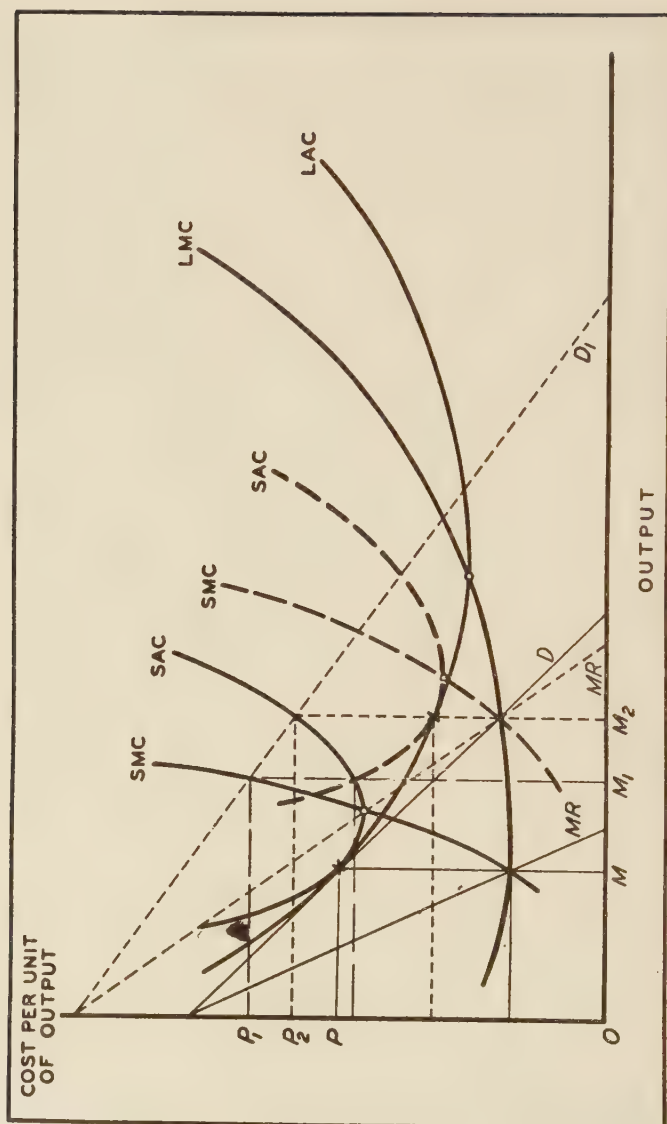


FIG. 2.—Output of the firm under monopolistic competition with and without free entry to the field

marginal-revenue curve falls faster than the demand curve. Thus, in Figure 2, MR lies below D at all points except at the point of origin on the Y -axis, where they meet. The entrepreneur will maximize profits by producing at an output which equates marginal revenue and marginal cost. This will be so whether the demand curve is higher than, equal to, or lower than, the marginal-revenue curve. If entrance into the productive field is unobstructed by ignorance, custom, or other obstacles, the presence of monopoly gains will induce new competitors into the field until equilibrium is reached at the point where average revenue (price) equates average cost.³⁷ The output OM in Figure 2 would then be sold at the price OP .

If entrance to the field is not readily feasible, monopoly revenue will persist. Equilibrium will still be reached at a point where each firm is producing an output which equates marginal revenue with marginal cost, but there will be no fixed relationship between average revenue and average cost (except that the former will always exceed the latter). In the first instance, where no monopoly revenue is present, output will be below the "optimum"—i.e., production will take place at the point of tangency of the short- and long-run average cost curves. The less elastic is the demand curve to the individual producer, the smaller will be the output relative to the "optimum" and the higher will be the price above the purely competitive price. In the second case (illustrated by dotted curves in Fig. 2), where equilibrium is consistent with monopoly gain, it is im-

³⁷ At that point marginal revenue will also equal marginal cost.

possible to say whether output will be less than, equal to, or greater than the "optimum." There is no more reason, however, to expect output to equal the "optimum" rate than any other rate. Price will, of course, always be higher than the "optimum" price. In Figure 2 the output OM_2 is produced at the price OP_2 (see also chap. vii).

In each of these instances the individual firm maximizes its advantage by selling at an output and price other than the so-called "optimum." Therefore, at least from the point of view of the individual firm, it is a misnomer to describe the minimum point on the long-run average cost curve as the "optimum" point when monopoly is involved. We will indicate in chapter vii that the social interest is ordinarily best served when monopoly elements are absent, but that the difference between the private and the social interest is not measured by the difference between actual output and output under long-run stationary conditions under pure competition. Of this also we will have more to say in chapters vii and ix.

This chapter has led us to the conclusion (1) that the concept of a "technical optimum" must be altogether disregarded and (2) that the traditional economic "optimum" is, at best, a flimsy instrument with which to investigate dynamic or monopoly problems. If we wish to retain the idea of an "optimum," we must find one better adapted to our needs.

CHAPTER III

THE PRODUCTION PLANS OF ENTREPRENEURS

THE FIRM AND THE ENTREPRENEUR

THE business firm is the basic productive unit in an enterprise economy such as ours, exactly as the family is the basic consumer unit. If we are to understand why capital resources are sometimes employed and sometimes left idle in the American economy or one like it, we must first know something of the production policies of those concerns which make up our productive system and which exercise direct control over our productive resources.

A firm, whether it be an individual, a partnership, or a corporation, is an aggregation of productive resources articulated by one or more individuals whose responsibility it is to plan the activities of the entire undertaking so as to maximize profit (or minimize losses after the investment has been made). The planning nucleus of the organization carries out that function spoken of in the economic lingo as "entrepreneurship." For analytical reasons the entrepreneur must be sharply distinguished from the capitalist whose property (i.e., capital)¹ is employed by the entrepreneur along with the services of

¹ The entrepreneur may either pay interest for the use of liquid capital in the form of investible funds or he may pay rent for the use of specific capital goods. The two methods are, theoretically, entirely equivalent. (See F. H. Knight, *Risk, Uncertainty and Profit* [Boston, 1921], pp. 168-69.)

labor. In practice, however, the entrepreneur generally, himself, furnishes the enterprise with some capital and frequently renders routine service as an administrator as well. It need not concern us, for purposes of this study, whether entrepreneurship is mixed with other capacities. Nor need we inquire whether it resides with a minority of the stockholders, the board of directors, the president or other paid executives, or somewhere else. The problem is the same wherever the responsibility lies.

There is a large literature in economics on the place of the entrepreneur in the productive process.² The need for his existence has been associated with the uncertainty surrounding business plans in a changing society.³

² See especially Knight, *ibid.*, and J. A. Schumpeter, *The Theory of Economic Development* (Cambridge, Mass., 1934) and, more recently, *Business Cycles* (New York, 1939).

³ The widely debated question as to the significance of "perfect foresight" in equilibrium theory naturally comes up at this point. We cannot go into the controversy in detail, but the following brief summary is appropriate.

Many of the older economists accepted the fact that "perfect foresight" is a necessary condition of competitive equilibrium. An unambiguous statement of this contention is found in the following passage by Professor Knight, "Chief among the simplifications of reality prerequisite to the achievement of perfect competition is, as has been emphasized all along, the assumption of practical omniscience on the part of every member of the competitive system" (*op. cit.*, p. 197. More recently Professor Knight has modified this position considerably, e.g., see "The Quantity of Capital and the Rate of Interest," *Journal of Political Economy*, August, 1936, p. 448 n.) Dr. O. Morganstern has recently expressed a vigorous contrary opinion on the ground that "a calculation of the effects of one's own future behavior always rests on the expected future behavior of others and *vice versa*" ("Vollkommene Voraussicht und Wirtschaftlichen Gleichgewicht," *Zeitschrift für Nationalökonomie*, Vol. VI [Vienna, 1935]; English trans. privately printed at Princeton, 1939, p. 12). This interdependence of expectations is inescapable and leads Dr. Morganstern to the conclusion that "unlimited foresight and

It has been pointed out that in a stationary state (or even in a changing world where a particular pattern of change has been generally accepted as a datum) production would merely require the matter-of-course execution of a pre-established program. No creative leadership would be necessary. Entrepreneurship becomes essential in an economy where intuitive business judgment, rather than routine repetition, must be relied on.

In view of the long-recognized importance of the entrepreneur, it is surprising to find that until recently little was written on the concrete problems with which he is faced. Only in the last two decades have economists interested themselves in the expectations of entrepreneurs and in business-planning.⁴ Since existing

economic equilibrium are thus irreconcilable with one another" (*ibid.*, p. 14). Dr. Morganstern's views have subsequently been upheld by Dr. T. W. Hutchison (*The Significance and Basic Postulates of Economic Theory* [London: 1938], chap. iv, sec. 4), by Dr. G. Tintner ("A Note on Economic Aspects of the Theory of Errors in Time Series," *Quarterly Journal of Economics*, LIII, p. 142), and by Professor Schumpeter (*Business Cycles*, I, 52-53). After denying that omniscience is necessary to competitive equilibrium, Professor Schumpeter goes on to say that "in the case of an undisturbed stationary process this question [perfect foresight] is of little moment, everyone having been taught by experience to follow the 'beacon lights' which are relevant to him and the meaning of which he does not need to explore" (*ibid.*, p. 53).

In the remainder of this essay we shall speak of expectations which are definite or vague; of those which prove to be correct and those which are incorrect. We have no occasion to make use of the concept of "perfect foresight" even if it has more meaning than the present writer is able to find in it.

⁴ Professor Knight's *Risk, Uncertainty and Profit* is, so far as the writer is aware, much the earliest work to give these problems serious consideration. High praise is due to Dr. Gunnar Myrdal for creative thinking along similar lines in his *Prisbildnings Problemet och Föränderlingshenen* (Stockholm, 1927). Unfortunately, however, the writer's unfamiliarity with Swedish prevents his speaking from firsthand knowledge. The literature which has appeared in the last five or ten years on expectations is too voluminous to be listed separately

productive capacity depends very largely on the past decisions of entrepreneurs, we shall be obliged to make a rather extensive study of these questions.

THE ASSUMPTION OF "RATIONAL BEHAVIOR"⁵

It is customary in economics to assume "rational behavior" on the part of consumers and producers, but too often the word "rational" serves to cover up confused thinking. What, then, should be meant when we speak of an entrepreneur behaving "rationally"? Plainly, to act "rationally" means to act consistently according to some plan, rather than to act aimlessly.⁶ A plan, in turn, must embrace some objective toward which the activities of the entrepreneur, as head of the firm, are directed. It is usually contended that in an enterprise economy the objective of the entrepreneur is to maximize the positive pecuniary discrepancy be-

here. Less has been written on production plans. Professor J. R. Hicks's *Value and Capital* (Oxford, 1939), Dr. A. G. Hart's "Anticipations, Business Planning, and the Trade Cycle" (unpublished dissertation, Chicago, 1936), and Dr. Moses Abramowitz' *An Approach to a Price Theory for a Changing Economy* (New York, 1939) have been of especial value to the writer in this field.

⁵ For an exhaustive study of the history of "rational behavior" in economic thought see Talcott Parsons, *The Structure of Social Action* (New York, 1937).

⁶ Professor P. N. Rosenstein-Rodan gives the following interesting definition of "rational" and "irrational" behavior. "By 'rational' we mean any action which is thought out beforehand, or reflected upon; i.e., action which is mentally considered in the economic plan before being actually carried out. Such action is therefore consistent [conduct]. Any action is 'irrational' which is carried out on the spur of the moment without any interval of time passing between deliberation and execution. The interval of time between deliberation and execution is then the criterion by which we distinguish between rational and irrational action" ("The Role of Time in Economic Theory," *Economica*, I [new ser.], 83 n.)

tween revenue derived from sales and total expenses.⁷ Given this principle of maximization as an objective, the "rational" entrepreneur would presumably seek its attainment through action based on his *expectations with regard to future prices*. Even if his expectations subsequently proved to be incorrect, his action would nevertheless be considered "rational" in this sense.

Admittedly, such a definition of "rationality" can lead to absurdities in extreme cases. An individual with the means and inclination to build interstellar rockets as a commercial venture could hardly be considered rational" even if he were convinced beforehand that the market for his product would be adequate to justify the undertaking. It must be assumed that the entrepreneur's expectations are "reasonable" in the light of information available to him. Yet there is no absolute measure of "reasonableness" except the success of the enterprise, which is an *ex post* measure. General consensus clearly offers no criterion of "reasonableness," since the most successful undertakings are often those which most people denounce as foolhardy. In the absence of a more satisfactory alternative, therefore, we are forced to accept the "reasonableness" of rocket schemes along with other more "sensible" undertakings except in cases where it could be shown that the entrepreneur was not acting in good faith or where he was mentally pathological. "Rational" behavior, then is the

⁷ Economists assume that costs include maintenance and replacement sufficient to leave net worth unchanged over the time interval during which production takes place. Accounting costs are not always identical, because of crude depreciation formulas and the accounting rules sometimes followed (see chap. v).

pursuit of an accepted goal by the best (i.e., most cost-saving) means known to the entrepreneur at the time when he decides to act.⁸

Economists are naturally fully aware of the fact that the incentive to maximize net income is not so all-pervading in most entrepreneurs as to exclude all other influences upon their behavior. (1) Aesthetic and cultural considerations frequently cause firms to incur expenses far in excess of those costs which would maximize net revenue. To some extent, good-looking factory buildings and attractive landscaping may result in better morale and more efficient work on the part of the employees; but there can be little doubt that much of this beautification is done without material motives in mind, and certainly without careful weighing of alternative costs. (2) The fascination of building and guiding a successful enterprise is a tremendously important factor in attracting capable men to positions of responsibility in business. Entrepreneurship offers at once an opportunity to satisfy man's creative, his power-seeking, and his gambling instincts. It is true that part of the interest is derived from seeing the undertaking succeed, and the success of an enterprise is measured largely in terms of profit. Yet it would be misleadingly simple to ignore the fact that interest in the process of achievement is itself a goal to many who regard profit as a more-or-less worth-while by-product (a kind of "score" in the contest). (3) Business leadership has appealed to others because of the power and prestige which accompany it. While it cannot be denied

⁸ See Hutchison, *op. cit.*, chap. vi.

that the accumulation of profit contributes to the success of a man ambitious for power and glory, it must also be recognized that experience, demonstrated ability, and the holding of a conspicuous office play their part as well. (4) Finally, a sense of social responsibility in business must not be overlooked as a motivating force behind entrepreneurial activity.

We do not suggest that the foregoing list is by any means complete. It should serve, however, to indicate the multitudinous noneconomic forces which influence motives for action as well as the process of achievement. It should further emphasize the fact that means and ends in business undertakings (as in most other human activities) are hopelessly intertwined. The conclusion which we must draw is that the "rational pursuit of a definite and unique goal" by the entrepreneur is an illusory conception. Most entrepreneurs probably have mixed aims springing from a variety of more or less conscious psychological and environmental causes. Their course of action based on these beclouded objectives would, at best, be partly confused. When, in addition the entrepreneur lacks conviction as to which course open to him would be most advantageous, one may well marvel at the relative continuity with which production seems, in fact, to be carried on.

It is a regrettable fact that complications are more easily recognized than incorporated into economic theory. Before we can fully understand the implications of noneconomic behavior, we must first discover the consequences of "rational" behavior directed toward the fulfilment of a unique goal. For the time being, there-

fore, we shall abstract from noneconomic motives, assuming that entrepreneurs really are primarily concerned with maximizing net revenue. We shall also disregard, for the moment, monopolistic or institutional conditions which might interfere with a smooth-running pricing system. After the principles governing the use of capital resources in a purely competitive economy have been considered, we shall examine the influence of institutional and monopolistic forces on resource use. (See chaps. v, vi, and vii.) In the last chapter we shall try to show the relationship between noneconomic behavior and waste.

PLANNING FUTURE PRODUCTION

The basic problem of production-planning is easy to formulate but difficult to execute. It is a question of selecting and employing the services of available resources at *going* prices in such quantities that the products which they yield, at a *future* time, may be sold at a price and in quantities which will maximize net receipts. Reduced to its simplest terms, the knowns in the equation (assuming pure competition and free entry to the field) are past and present prices and the present state of the arts; the unknowns are future prices and the quantitative results of productive activity. A production plan, then, is the plan of action of the entrepreneur, based on his knowledge of present and past conditions and his given expectations with regard to future prices. Uncertainty is present because investment in capital goods represents a commitment over time and a reliance on the "correctness" of a particular set of price expecta-

tions at the time the commitment was made. Investment in durable goods is essentially a forecast of future prices by the entrepreneur. It is an indication that the entrepreneur has adopted a production plan. But his action is founded on judgment, not on certainty. Profits arise when actual conditions turn out to be at least as favorable as those in anticipation of which contracts were made.⁹

Let us suppose (with Professor J. R. Hicks¹⁰) that price expectations are perfectly definite, even though they may prove to be incorrect. In that case the entrepreneur may expect prices (1) to continue indefinitely at the same level; (2) to return to some former level; (3) to continue to change in the same direction in which they have recently been moving; or (4) to fluctuate according to some definite pattern. Whatever the entrepreneur's expectations (as long as they are definite), there will be some program of future production which, in the light of his present expectations, will maximize the present discounted value of his *anticipated* future net receipts.¹¹ It is that program which he will select from among technically feasible alternatives.

⁹ Knight, *Risk, Uncertainty and Profit*, chaps. ii and ix.

¹⁰ J. R. Hicks, *op. cit.*, chap. xv. Professor Hicks has made the production-plan approach the core of his dynamic equilibrium theory.

¹¹ The scale of output will be determined by "some sort of restricted *business opportunity*, constituting part of the entrepreneurial nucleus. This may consist in an advantageous site, some measure of control of buying and/or selling markets, control of a process or simply the opportunity to make the most of his own services" (Hart, *op. cit.*, pp. 5-6). Dr. Hart points out that maximizing net receipts is only the goal of the entrepreneur when production consists of an isolated operation, or in the case where a constant scale of operations is planned for. Where operations are expected to vary, *antici-*

It is possible to represent such a production plan graphically (see Fig. 3) by measuring time along the horizontal axis and value units of output per unit of time along the vertical axis. Starting from time t_0 (in Fig. 3), when the decision to start the enterprise is made, the entrepreneur plans future output through time. Price expectation for each period, and expectations with regard to technical conditions would determine the output which it would be profitable to produce, together with the input it would be desirable to use in that period. Linearly sloping expectations would not present overwhelmingly difficult problems so far as plant construction is concerned, for it would be relatively simple to plan for gradual expansion or contraction of plant in order to allow for trends in price change. Planning would become more complicated if expectations were curvilinear or broken. Then it would be necessary to overbuild plants in terms of slack demand, so as to have adequate capacity to fill orders during times of peak demand.¹² Such a situation is represented in Figure 3, where at time t_1 the expectations of the entrepreneur change and he alters his production plans. In our illustration they become curvilinear instead of linear. In practice they might be simple or highly complicated.

tions must be included and the present value of future net receipts must be discounted (*ibid.*, pp. 9-10). The entrepreneur might alternatively seek to maximize the present worth of his capital assets, since the two approaches are equivalent (F. H. Knight, "The Ricardian Theory of Production and Distribution," *Canadian Journal of Economics and Political Science*, I, 14-15 n.; also Hart, *op. cit.*, chap. ii). There is no implication that net revenue will be maximized during a particular accounting period (Hart, *ibid.*, p. 19).

¹² Alternatively, equipment could be built with greater flexibility, or storage facilities could be improved (see chap. iv).

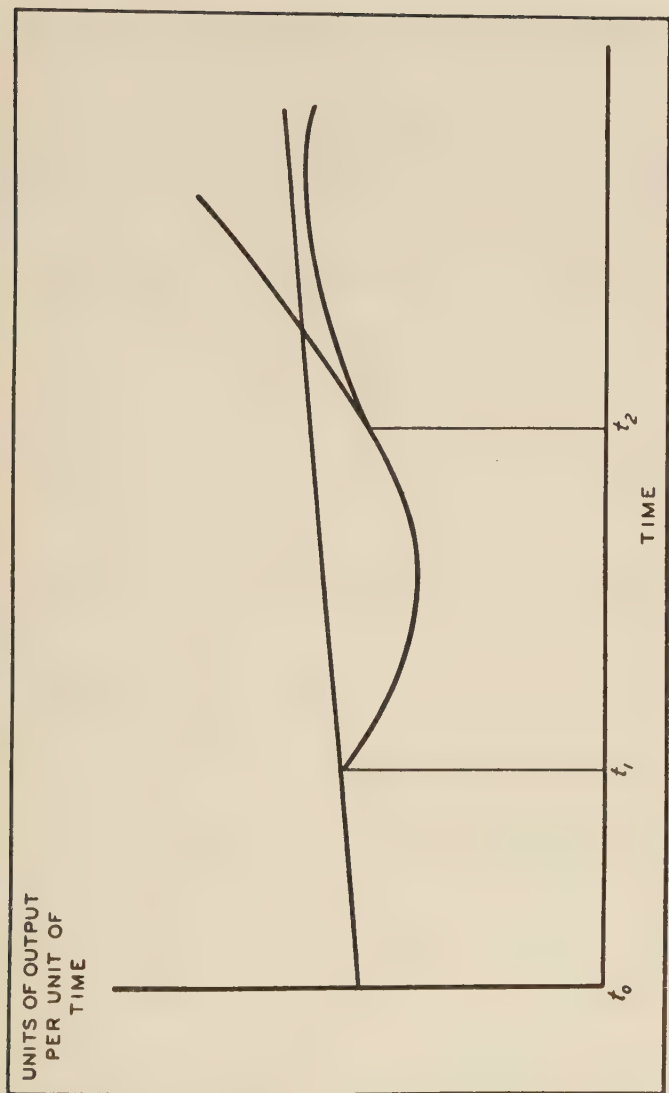


FIG. 3.—The planned rate of output of a firm through time

Professor Hicks also uses an algebraic notation to describe the production plan which is helpful as an aid to the literary and graphic expositions.¹³ Successive periods of time are designated by the numerical subscripts 0, 1, 2, . . . ; the input of resources by the letters $A, B, \dots$; and the output of different finished products by the letters $X, Y, \dots$. Any production plan could then be written in the following generalized form:

$$\begin{array}{l} A_0, A_1, A_2, A_3, \dots, A_n, \\ B_0, B_1, B_2, B_3, \dots, B_n, \\ \cdot \quad \cdot \quad \cdot \quad \cdot \quad \cdot \quad \cdot \quad \cdot \quad \cdot \\ X_0, X_1, X_2, X_3, \dots, X_n, \\ Y_0, Y_1, Y_2, Y_3, \dots, Y_n, \\ \cdot \quad \cdot \quad \cdot \quad \cdot \quad \cdot \quad \cdot \quad \cdot \quad \cdot \end{array}$$

The flexibility of the production plan approach must be emphasized. Over the period during which operations are contemplated it may be desirable (say) to start off with an expansion of net worth at the expense of withdrawals or through the floating of new capital stock issues or loans. As time goes on, net worth may be held constant, while withdrawals increase. The ultimate liquidation of the firm may be planned for, or its continuation as a source of income for an indefinite period may be proposed.¹⁴ A capital outlay in one period may replace variable costs during the following

¹³ Hicks, *op. cit.*, p. 195.

¹⁴ If speedy liquidation is planned, high scrap value will be an important consideration (Abramowitz, *op. cit.*, p. 93). As liquidation becomes a more remote prospect, its importance fades, since the present discounted value of a future net worth becomes increasingly small as the future date becomes more distant (Hart, *op. cit.*, p. 18).

periods. Inventories may vary in size and composition during different time intervals according to price expectations. Changes in the financial structure may also be scheduled. Short-term financing may partly take the place of long-term financing, or equity ownership may take the place of bonded interests. Within limits the values of the resource coefficients may vary independently through time. The limits are governed by the tendency for the value of the coefficients of competing resources to vary inversely, and of complementary resources to vary directly, with one another.¹⁵ The above algebraic notation is adapted to bringing out all of these anticipated changes.

That plan which the rational entrepreneur selects as "best" may accurately be called the "optimum" plan (unlike the minimum point on the long-run average cost curve or the technical "optimum" discussed in chap. ii), since it is the most favorable known plan from the point of view of the firm at the time when it is chosen.¹⁶ It will remain the optimum plan as long as prices and the technical methods of production, etc., act according to expectations.

In contrast with this dynamic approach, the cost curves of static theory refer only to one set of prices in a changeless setting. That is to say, each point on a cost curve would correspond with alternative values for a *single column* in the above sample production plan.

¹⁵ Hart, *op. cit.*, p. 30.

¹⁶ Optimum is used in this sense by Dr. Hart (*ibid.*, p. 10) and by Dr. George Stigler ("Production and Distribution in the Short Run," *Journal of Political Economy*, XLVII, 308). On the other hand, it need not be the optimum plan from the point of view of society (see chaps. vii and ix).

The production plan is dynamic in the sense that it takes into account anticipated price changes. Short-term and long-term cost curves both refer to some set of conditions which is assumed to remain stationary through time. The short-run cost curve is the locus of the costs of varying outputs after a period of time has elapsed long enough so that alterations can be made in the quantities of the *variable* resources used; whereas the long-run curve is the locus of the cost of varying outputs after a long-enough time has elapsed for *all* desired changes to be made in plant and equipment.¹⁷ In each instance the resource price changes, which have made adjustments necessary, are assumed to have taken place in the past. The curves as drawn are only valid as long as no further resource price changes take place. They show two stages in the process of adjustment toward equilibrium as a result of a past event; but they are of no help in determining future policy unless there is reason to believe that no further resource price changes are likely to occur. In other words, a point on a long-run cost curve could only be equivalent to the optimum production plan if, after t_0 , the state of the arts and all the values of the resources $A, B, \dots$, and the product X were to remain constant for each subsequent time interval. If, in addition to stationary conditions, atomistically competitive conditions prevailed in the in-

¹⁷ The use of the term "long-" and "short-run" is, in any case, rather arbitrary, since the time which it takes to make necessary adjustments to change varies from resource to resource. No clear-cut categories such as "short-run" and "long-run" can more than vaguely approximate reality. See F. H. Knight, "Cost of Production and Price over Long and Short Periods," reprinted in *The Ethics of Competition* (New York, 1935), and Stigler, *op. cit.*, pp. 306-11.

dustry, the optimum production plan for the firm would also correspond with the minimum point on the long-run average cost curve¹⁸ (providing, of course, that the production plan was drawn up at a point in time *after* all desired plant changes had been made in order to allow for previous price changes). But under no other circumstances would the long-run stationary "optimum" correspond with the optimum production plan.

Production plans need only reflect the expectations of an entrepreneur at the moment when they are drawn up. Events may so change at some future period t_1 as to upset completely his original calculations. In that case the entrepreneur must alter his plan so as to maximize the discounted value of his expected net income as of t_1 (see Fig. 3). It will be in his best interest to make what use he can of the equipment which he already has.¹⁹ The new production plan will begin at the point at which the original one was abandoned, but the time shape of the new plan will be different from that of the old one.

In a rapidly changing world it may be necessary to alter production plans at frequent intervals.²⁰ The plan,

¹⁸ It will be obvious that the price of the product (determined by the equation of demand with supply for the industry) will determine the profitable volume of output for the firm if resource prices are given. The product price will equal minimum long-run average cost (including rent) in perfect competition, because if it were higher old firms would expand output and new firms would enter the field of competition until the product price was forced down to the minimum cost level.

¹⁹ Each resource will ideally, in a capitalist economy, be used so that the marginal cost of using the resource will just equal the marginal revenue resulting from its use.

²⁰ The costs of changing plans, however, will set a limit on the number of changes which it will be profitable to make in any period of time (Hart, *op. cit.*, pp. 134 ff.).

or series of plans, which the entrepreneur actually follows may be different, therefore, from the one which he would have followed had he foreseen from the beginning the course of events as they really occurred. But human beings are not endowed with divine insight; so we must be content to reserve the word "optimum" for that connected series of segments of production plans which represents the entrepreneur's best judgment with regard to the future at successive intervals of time.

Thus far, with Professor Hicks, we have discussed production plans drawn up by the entrepreneur whose price expectations are definite and lead to a single valued solution. How would production plans differ if entrepreneurs were to feel uncertain as to the probable course of future events? The answer is by no means clear-cut.

Human beings do not react to uncertainty according to any prescribed pattern. Uncertainty seems to make some more venturesome and others more cautious, depending on the temperament of the individual. The same person, in different moods, might well react entirely differently to the same decision involving uncertainty.

The entrepreneur's reactions to uncertainty are, to some extent, dependent on his experiences with it in the past. If, previously, his expectations have largely been substantiated or pleasantly disappointed, renewed uncertainty may only constitute a very slight deterrent to definite action on his part. If, on the other hand, the entrepreneur has had a record filled with past errors in judgment of a disagreeable character, he may face new uncertainty more haltingly, since his faith in his own judgment may have suffered.

The consequences of right or wrong decisions may also influence reactions to uncertainty. A man who would be willing to proceed boldly when only a small part of his fortune was at stake, might grow cautious when there was a chance of his losing all he possessed. If his life was involved, he might refuse to act at all, even though his ideas about the probability of his success or failure had not changed. Similarly, large stakes will cause some men to act even when the chances of success are estimated to be slight. Others prefer the prospect of small gain where they feel confident of success.

The decisions of entrepreneurs always involve an element of uncertainty; but their estimates of the degree and kind of uncertainty vary in important respects. It has been suggested in the recent literature on the subject that entrepreneurs confronted with uncertainty think in terms of the probability distribution of their expectations with regard to future events. When the character (i.e., dispersion, skewness, etc.) of the probability distribution is regarded as definite, the uncertainty may be looked upon as an insurable risk. If, however, there is doubt in the mind of the entrepreneur as to the nature of the probability distribution of his expectations, he may have a probability distribution of a probability distribution. This would be true of uncertainty in the sense in which that word has been used by Professor Knight.²¹ An increase in risk ordinarily has

²¹ Knight, *Risk, Uncertainty and Profit*, chap. vii. This method of presentation was suggested to me by Dr. Gerhard Tintner in an unpublished note entitled "Models of Expectations." A similar (and earlier) approach along the same lines is to be found in an article by J. Marshack, "Money and the Theory of Assets," *Econometrica*, October, 1938.

the same effect on production plans as a fall in the rate of interest. That is to say, it has a depressing effect on the expected rate of return. Uncertainty, on the other hand, is more likely to increase the demand for plant flexibility and the demand for money.²² (See chap. iv.)

The effect of uncertainty upon production plans depends very largely upon the attitude of the entrepreneur toward uncertainty. As long as the entrepreneur has confidence in his own judgment, production plans are likely to be definite. If he is unsure of himself, his lack of confidence will be reflected in production plans which postpone as many decisions as possible and which refrain from making binding commitments of long duration. Incorrect anticipations, however, may be just as definite as those which prove to be correct. Vagueness and indecision may be present even in times of little change. There is only an indirect correlation between correct decisions and definite expectations.

Monetary instability is probably the most important single reason why entrepreneurs have indefinite expectations; but political perturbations, price manipulation by monopolies, and the like contribute their full share of uncertainty as well. Extraneous changes such as these are far more disrupting to business planning than the ordinary uncertainties associated with changes in relative cost and demand which are inevitable in any developing society. This country has had an unpleasantly large dose of uncertainty caused by monetary and political instability in the past decade.

²² These consequences of risk and uncertainty have been suggested by Professor Hicks in "A Suggestion for Simplifying the Theory of Money," *Economica*, Vol. II (new ser.).

Indefinite price expectations make the selection of an optimum production plan very much more difficult, since the values of coefficients are probability distributions rather than specific discounted prices. The greater the dispersion of the probability distribution the more difficult planning becomes. If, in addition to uncertainty with regard to future prices, there is uncertainty as to the course of future interest rates, the rates at which future prices should be discounted will also be matters for intuitive judgment.²³ As uncertainty increases, production-planning becomes impossible except for short periods in advance. In cases of extreme uncertainty entrepreneurs tend merely to extrapolate current price movements just far enough ahead so as to make unavoidable decisions. Output in the near future becomes more expensive through unwillingness to make investments which would be cost-reducing over a longer period of time, for the likelihood of large capital loss overbalances the desire to reduce cost. Plans for the more distant future are vague or remain unformulated. Production becomes a matter of momentary expediency rather than of skilful forecasting.

We have set forth, in this chapter, a dynamic optimum which may prove to be a powerful analytical tool, at least when we are dealing with definite expectations. The reader must be reminded, however, that our optimum refers solely to the individual firm. Further, the expectations of the "rational entrepreneur" have been accepted as data. We have not considered whether the interest of the firm coincides with the best interest of

²³ See Hart, *op. cit.*, chap. iv; Abramowitz, *op. cit.*, pp. 89 ff.

the industry and of society in general. Our justification for adopting such an optimum is that, in the opinion of the writer, it is the only one which is compatible with the tenets of an enterprise economy. We must reserve until later the discussion as to whether society would be benefited by political interference with the enterprise economy (see chap. ix). Our immediate task is to discuss the meaning of unused capital resources in terms of our production-plan optimum.

CHAPTER IV

RESOURCE USE WITH CHANGING CONDITIONS

INTRODUCTORY

WE HAVE been a long time in coming to the central theme of this essay because it has been necessary to construct our tools. Now, at last, we are prepared to ask ourselves: What is unused capacity, and why are capital resources sometimes idle? Once these questions have been answered, we will be in a position to discuss the relationship between unused resources and waste.

Examples of deserted buildings, rusting machinery, abandoned railway track, and the like confront us on every hand. They appear to stand out as glaring instances of unused capital resources. Yet our study of capital has shown us that capital, by definition, is a source of future service. Are we justified in continuing to call equipment which is incapable of rendering further valuable service a "capital good"? Why should machinery which is no longer useful be called an "idle capital resource" any more than a deposit of some rare metal for which there are no commercial uses? What distinction, if any, are we to make between "idleness" and "uselessness"?

To get at the heart of the problem it will be necessary to find out why entrepreneurs use capital resources as they do use them. If we know the reasons for the actual

degree to which resources are used, we shall be in a better position to have a critical judgment of the meaning of "idleness."

It is apparent, from what has already been said, that resources will be used in one way if actual events substantiate the expectations of entrepreneurs and in another way if unforeseen changes continually make necessary the readjustment of production plans. It is also clear that the behavior of the entrepreneur, when he considers his own output of a product to be an insignificant portion of the total output by all firms, will be very different from his behavior when he recognizes the effect on price which changes in his own output will have. (See chap. vii for further discussion.)

In the remainder of this chapter we will study capital resource use under purely competitive conditions. To begin with, we will examine the problem of the entrepreneur who is starting out in business for the first time. Later we will study the effect of unforeseen change on the production plans of entrepreneurs who are already in business.

ANTICIPATED CHANGES IN RESOURCE USE

The prognostications of the entrepreneur are twofold: he must estimate both future cost functions (including resource prices) and future product prices. The two are as inseparably bound together as the blades of a scissors; yet it is possible to study the active influence of one while holding the other constant. It is precisely that which we propose doing in order to discover how different cost and demand expectations affect resource use.

FIXED PLANT AND FLEXIBILITY

In building a plant for the first time the entrepreneur must keep uppermost in his mind the degree to which his investment is committed to the rendering of specialized services and the length of time over which it will remain fixed. Long-term commitments in costly and specialized equipment are made because they may make possible a reduction of unit costs when operations are undertaken on a large scale. They are undesirable, however, if circumstances change so that the same product can be produced more cheaply by other means, or if another product becomes more sought after than the one produced by the specialized equipment. The entrepreneur must constantly balance the advantages of specialization against the advantages of flexibility. His decision will be swayed one way or the other in any particular instance, depending on the relative importance of low unit costs through large-scale production, as compared with adaptability to change and uncertainty. The particular technical methods of production which are actually selected will be chosen because it is expected that, in the light of available information, they will make possible the maximization of discounted net revenue to the enterprise.

Once an investment has been made in a particular piece of specialized equipment, it is ordinarily impossible to recover the full value of the investment if changes occur which render it valueless in the use for which it was originally designed. The resource then becomes idle and is discarded, or else is sold for scrap. The owner of the resource naturally suffers a loss. The

more flexible the resources are (i.e., the less specialized they are), the less likely they are to become valueless (and hence to be idle) in times of change. As we have just seen, however, a high degree of resource flexibility may raise the unit costs of production.

Since flexibility is of the utmost importance in production-planning, it is necessary to consider some of the ways in which flexibility may be incorporated into a plant before turning to a study of resource use under changing conditions. (1) Fixed plant may be made less durable through the use of cheaper and less lasting materials. Investment can thus be shifted more rapidly and with less capital loss in accordance with anticipated changes in cost and demand conditions. (2) Where economies of scale are more important in management than in physical plant, more units of smaller machines may be substituted for fewer units of larger ones (i.e., the machines may be made more divisible and more mobile). In this way, variable (i.e., marginal) costs can be kept fairly constant over a wider range of output, so that fluctuations in the rate of output will not bring about corresponding fluctuations in direct costs per unit.¹ (For purposes of planning, overhead is a "sunk"

¹ Dr. Joel Dean, in a recent statistical study of marginal costs in the furniture industry, discovered marginal costs to be constant over a wide range of outputs (*The Statistical Determination of Costs with Special Reference to Marginal Costs* [Chicago, 1936]). This result, which is likely to seem surprising to anyone familiar with marginal cost curves as they are traditionally drawn, becomes more understandable in the light of the foregoing discussion. Constant marginal costs may be purchased by sacrificing appreciably lower unit costs over a narrow range of outputs. Similar conclusions were reached by Professor T. O. Yntema with respect to steel and by Professor J. M. Clark with respect to cement production in the United States.

cost and need not be taken into account once it has been incurred.) (3) Equipment may be used which is readily adaptable to more than one use. For example, an ordinary metal lathe might be used instead of a specialized milling machine. The greater adaptability of the lathe would be purchased at the cost of a need for more labor to operate it per unit of output produced.² (4) Sometimes when frequent changes in the rate of output are anticipated, it is possible to build machinery which is equally efficient technically over a range of outputs. The flexibility of steam boilers, we pointed out in chapter ii, can be varied by variations in the initial cost of construction. (5) Technical flexibility can further be enhanced by increasing the availability of resources.³ An entrepreneur whose expectations were perfectly definite would not feel obliged to maintain inventories of working capital or of finished product, as he would only lose interest on the money invested in idle stocks by so doing. Continuity of production, however, is an important factor in low operating costs. If his expectations are vague or if fluctuations in resource use are anticipated, he will forego some interest in order to make sure that there will be no hitches in production owing to shortages of working capital. The same is true of fixed equipment which is used only intermittently.⁴ When expectations are definite, it will ordinarily be cheaper to

² This discussion of adaptability is similar to Dr. J. Marshack's argument with respect to the "plasticity" of assets ("Money and the Theory of Assets," *Econometrica*, Vol. VI, No. 4).

³ See W. H. Hutt, *The Theory of Idle Resources* (London, 1939), chap. iii.

⁴ E.g., expensive business machines in a small office and specialized steam shovels and derricks for a building contractor who does odd jobs.

rent infrequently used machines at the particular times when they are needed. But if the entrepreneur is not sure when he will need them and is unable to rent them on short notice, it may be worth his while to make a larger capital investment in order to insure their availability. The costs of availability must be weighed against the costs of interrupted production and the loss of customers. (6) Large storage space and sizable inventories offer a means of cushioning production against fluctuations in demand.⁵ Cold storage and preservatives which lengthen the life of perishable commodities fall into the same category. (7) Finally, increased financial liquidity is a method of protecting a firm from uncertain conditions and imperfections in the capital market.⁶

In each of the cases we have mentioned, plant flexibility is purchased at a cost. In some instances flexibility makes possible the more continuous use of fixed resources. In other instances part-time plant idleness is a means of increasing flexibility. The desirable degree and kind of flexibility depends on the particular expectations and the industrial situation at hand. Keeping in mind these various methods of adapting plant to change and uncertainty, we now turn to expected variations in relative costs which influence the use of fixed resources.

CHANGES IN COST CONDITIONS WHICH MAY BE ANTICIPATED

1. The seasons of the year have a significant effect on the costs of many industries. With a fair degree of accuracy the effects of seasonality are predictable. Farm

⁵ A. G. Hart, *Anticipation, Business Planning, and the Trade Cycle*, pp. 110 ff.

⁶ *Ibid.*, pp. 117 ff.

machinery, for the most part, can only be used a few months, or even days, during a year and must justify its purchase during those months if it is not to be a capital loss. Canning factories are subject to seasonal use because there are few regions where vegetables and fruits can be grown the year round without prohibitive costs. Transportation and refrigeration costs prevent canning factories from importing extensively vegetables and fruits from different climatic zones at different times of the year. Ordinarily it is cheaper, therefore, to build several factories in different areas, allowing each to be idle part of the year.

The building industry is affected by the seasons in many parts of the world. Frozen ground makes foundation-digging more costly, and subzero weather presents problems in cement-mixing (to mention only two cost elements which vary with the seasons). Modern technology has greatly lengthened the profitable building period by introducing powerful steam shovels and by a process for mixing cement in cold weather; but much building equipment still is left unused during the severest winter months.

These few examples will serve to illustrate the effect of seasonality on costs. Attention must be called to the fact that in each case the entrepreneur chooses part-time plant idleness as a less expensive alternative than full-time use. Seasonally used equipment is purchased or constructed in the expectation that it will be profitable even though it is not continuously employed—i.e., that the full cost of the equipment will be covered by the product which it is used to help produce during the

season of the year when production is profitable. Any other predictable periodic changes affecting costs would be treated similarly by entrepreneurs whether they recurred daily or in cycles of two or three years.⁷ Continuous utilization of plant is, or at least should be, an objective only in so far as it increases net profits over the entire period within the horizon of the entrepreneur.

2. Gradual changes in the relative scarcity or abundance of resources, in so far as they are anticipated by entrepreneurs, must also be provided for in production plans through readjustment of the technical methods of production over time. These changes in relative abundance make themselves felt through relative price changes. Broadly speaking, they are due to trends in population, the degree of monopoly, economic and political institutions, consumer taste, and technology (including discovery). They may occur for a variety of reasons.

To give a few concrete instances, a resource is likely to become relatively more abundant (assuming demand conditions do not change), and hence less costly, for an entrepreneur (*a*) when new sources of supply are discovered;⁸ (*b*) when new processes for extracting or fabricating the resource appear on the market; (*c*) when substitutes for the resource are so perfected as to compete effectively with the resource in some of its uses; (*d*) when industrial organization is improved so that the

⁷ Time out for cleaning and repairs would fall into this same broad category. Blast furnaces, for example, are out of operation about a quarter of every year for relining.

⁸ Newly found mineral deposits offer an obvious example.

use of the resource becomes more efficient; (*e*) when the labor force increases; (*f*) when the quality (i.e., intelligence, skill, etc.) of the working population improves; (*g*) when lower transportation rates enlarge the area of the field from which resources may be drawn; (*h*) when customs affecting resource use change so as to make the resource relatively more abundant; (*i*) when there is a regional change in the relative cost of resources so that interregional resource movements become profitable;⁹ (*j*) when monopoly control of resources diminishes; and (*k*) when tariff or tax reduction and the removal of quotas makes the resource available from foreign markets.

Knowledge of these conditions or trends helps the entrepreneur to formulate his resource price expectations. To the extent that he can detect from them trends in resource prices, he will succeed in planning a better (i.e., more accurate) apportionment of the technical ingredients in successive time intervals. The entrepreneur will plan to incorporate into his plant whatever degree of flexibility he thinks desirable in the light of his present knowledge. If he expects relative costs to change rapidly and frequently, it is probable that an appreciable amount of flexibility will be advantageous; however, he may also contemplate a rapid rate of obsolescence as a result of changes which could not wisely be taken care of through greater flexibility. If, on the other hand, he expects relative cost trends to

⁹ A good example of this is the movement of cotton mills from New England to the South as the relative cheapness of southern labor became more important.

be gradual, it may be profitable for him to build a more highly specialized plant from materials which will not deteriorate so soon. Other things being equal, it is desirable that the rate at which equipment is expected to become obsolete should approximate the normal rate of wear-and-tear depreciation (i.e., that obsolescence minus physical depreciation should approach zero).

CHANGES IN DEMAND WHICH MAY BE ALLOWED
FOR IN PRODUCTION PLANS

Expected fluctuations in demand (i.e., in product price) condition the proposed use of capital resources in much the same way as expected cost changes.

1. Seasonality in demand is partly the result of climatic conditions in temperate zones. There is a greater demand for warm clothes, snow sports equipment, coal, and the like in the winter, whereas bathing suits, ice, and electric fans have a larger sale in the summer. Human habits and customs also make for seasonal demands. Thus, department store turnover is greater in December because of Christmas shopping. Transportation facilities are most taxed before and after holidays, especially Labor Day.

Daily, weekly, and monthly cycles in demand are plainly discernible in many industries. Daily peaks in demand for electricity and telephone service are matters of common knowledge. Amusement and recreational facilities are subject to pronounced weekly fluctuation in demand. Accounting departments of merchandising enterprises are busiest at the beginning of each week, when bills are paid.

Periodic fluctuations of the sort we have mentioned are sufficiently regular so that entrepreneurs can plan for them with considerable exactness. By seasonal price concessions regularly recurring variations in demand can, to some extent, be flattened out. There are always some people who will buy winter clothes at summer sales. Many persons postpone long-distance telephone calls in order to take advantage of night rates. Violent periodic fluctuations in the intensity with which capital resources are used can further be moderated in some instances by finding off-season uses for the resources. New England summer resorts have encouraged skiing in the winter as a means of interspersing another season. Coal-dealers frequently sell ice jointly with coal, to even out the use of delivery equipment and office staff.

Schemes for making possible the more continuous use of fixed resources should always be undertaken as long as the expected addition to revenue covers the expected increase in variable costs, including the additional wear and tear associated with the added use. Where it is unprofitable to eliminate seasonality in the use of fixed resources, the resources should not be purchased unless it is expected that the expenditure will be justified by part-time use.

2. In industrial countries fluctuations in business conditions, and consequently in demand, have appeared semiperiodically for more than a hundred years. They have unquestionably been responsible for a large part of so-called "excess capacity." What is not clear is the extent to which they have been allowed for in the production plans of entrepreneurs.

Business cycles are by no means uniform in intensity from cycle to cycle or from industry to industry within a single cycle. Estimates of the average length of the cycle vary from three to twelve years. These facts, coupled with the consideration that the average businessman is only likely to experience three or four cycles during the course of his business career and that production plans are probably not ordinarily projected many years ahead, lead one to doubt that business cycles are planned for with any large degree of definiteness. Entrepreneurs in the basic capital-goods industries, which are highly sensitive to changes in the level of production, are most likely to be mindful of business cycles in their production-planning. But the capital-goods industries are also likely to produce on a large scale and to be monopolistic. Their business-cycle policy, therefore, is likely to be tied up with price-fixing and trade agreements (see chaps v and vii). Business cycles cannot play an important part in the production plans of the purely competitive entrepreneur since he is unable to fix prices and to store up large reserves, etc. Either they come as an event for which the entrepreneur is not prepared, or else his preparation is along lines made possible through monopolistic control.

If, however, a competitive entrepreneur should have definite expectations as to general price-level changes for several years to come, his production plans would be materially altered. Not only would he have to allow for relative changes in the price relationships of different resources through time; he would also have to take account of the relative changes in the whole price struc-

ture as between the present and future periods. Flexibility is thus at a premium more than ever. In order to avoid capital losses he would be obliged both to build flexibility into his plant and to hedge. That is to say, if all present prices are higher than all expected future prices, present investment in durable capital goods will be minimized, and claims on future currency will be purchased at a premium. If, on the contrary, present prices are lower than expected future prices, it will be advantageous to the entrepreneur to invest heavily in durable capital goods in the present, while purchasing claims on future currency at a discount.¹⁰ As Professor Hicks expresses it, there will be a tilting of the production plan in favor of future or present investments, depending on price-level expectations.¹¹ Otherwise the incorporation of expected price-level changes in production plans would involve no new principles. The entrepreneur would still wish to maximize the present capitalized value of his expected future revenue.

3. Special events, such as a world's fair, a large convention, an anniversary celebration, and the like, may

¹⁰ Hedging is clearly possible only when the future price expectations of different entrepreneurs are widely divergent. The nearer alike their price expectations are, the closer will be the discount or the premium to the actual price which is expected to prevail, and the less advantageous it will be for the entrepreneur to hedge.

¹¹ J. R. Hicks, *Value and Capital*, chap. xvii, sec. 3. Professor Hicks places more emphasis on the influence of expected changes in the interest rate as a cause of tilting the production plan. It is the belief of the present writer that expected price-level changes would be more important. Dr. Hart would seem to concur in this view (*op. cit.*, p. 32). The empirical study made by J. E. Meade and P. W. S. Andrews also confirms this contention ("Summary of Replies and Questions on Effects of Interest Rates," *Oxford Economic Papers*, No. 1 [Oxford: 1938]).

lead entrepreneurs to expect temporary shifts in demands. Such a temporary rise in prices might justify an expansion of plant capacity even though it were realized that the new plant would only be used for a short period. The plant would then be constructed with the knowledge that it would be left idle or scrapped before its physical serviceability came to an end, but with the expectation that the investment would be more than recovered in the limited period of expected high prices. Professor Hicks calls attention to the fact that durable goods built for a period of use which is less than their physical life exemplify a special kind of complementarity through time.¹² A durable source of productive service cannot be produced independently for a single period of time any more than cotton can be produced without cotton seed or beef without hides. It may be possible, however, to make the plant less durable or to increase its salvage value by making it adaptable to some other use. Alternatively, if the product is non-perishable and if storage charges are not prohibitive, stocks may be accumulated over time in anticipation of the limited period of higher prices. This would mean a smaller initial investment in equipment which would be used more continuously. On the other hand, idle inventories would be larger. Once more a compromise will be reached, this time between periodically unused capacity and large inventories. Demand and cost considerations will determine where the line shall be drawn.

4. Anticipated trends in relative demand resemble very closely gradual cost changes in their effect on pro-

¹² *Value and Capital*, p. 208.

duction plans.¹³ To some extent they bring about readjustments in the technical methods of production within an industry. In part they cause the gradual disappearance of some industries and the emergence of others. It will be helpful to consider some of the outstanding forces making for trends in relative demands.

Tastes and fashions in consumption goods are in a constant state of flux. The intelligent entrepreneur tries to anticipate the direction of the trend so that he will be sure to have equipment which will produce the "fashionable" version of his product at all times. In a purely competitive society the direction of the trend would not be dependent on the selling activities of the entrepreneur, since advertising is not compatible with the assumption that the output of each entrepreneur has a negligible influence on price.¹⁴ Nor need the entrepreneur know the reasons for changes in taste. Adjustments to anticipated trends in taste, therefore, will be a perfectly straightforward matter, presenting no new complications.

Population changes affect trends in relative demand in several ways. Such a change may exert a profound influence on the relative demand for consumer, as compared with capital goods, by means of the celebrated acceleration principle of derived demand. The acceleration principle points to the fact that an increase in the demand (thought of as the time rate of intended consumption at a given price) for consumption goods is

¹³ In practice, of course, relative prices are mutually determined through the interaction of demand and cost conditions.

¹⁴ The effect of advertising on resource use will be discussed in chap. vii.

likely, *ceteris paribus*, to bring about a more than proportional increase in the demand for capital goods.¹⁵ Thus, changes in the rate of growth of population, as well as absolute changes in the number of individuals in the community, may have repercussions on the relative demand for consumer and capital goods. Some contemporary economists have made the decline in rate of growth of the population of this country play an important part in their explanation of the present prolonged depression and persisting unemployment.¹⁶ Changes in other relevant variables, and most especially in the propensity to consume, might, of course, compensate for the relative decline in the demand for capital goods, and for this reason vigorous government spending is advocated as a means of stimulating consumer demand.

Movements in population from one region to another or from city to country constitute another type of population change which may influence relative demand. They ordinarily result in price readjustments within the regions affected. Usually migrations in population are gradual enough to be predictable.

Changes in the volume and distribution of income are almost certain to occur along with changes in population. But they also take place for other reasons as well; so they must be considered separately. Trends in the *volume* of national income (population and income distribution remaining constant) will almost certainly bring about shifts in relative demand, since it is highly

¹⁵ For a fuller discussion of the acceleration principle see p. 84, n. 30.

¹⁶ See especially A. Hanson, *Full Recovery or Stagnation?* (New York, 1938).

improbable that the community will wish the same relative amount of each commodity as income changes. In other words, relative demand is a function of income as well as of price. Similarly, trends in the *distribution* of income between different income groups are also important because of their effect on prices through the income-elasticity of demand.

Any of these trends might, to a greater or lesser extent, be taken into account in the production plans of a purely competitive entrepreneur.

UNFORESEEN EVENTS LEADING TO THE ALTERATION OF PRODUCTION PLANS

Thus far in this chapter we have sought to establish the lines along which the rational competitive entrepreneur would plan to build and use fixed equipment under different types of definite price expectations. We have assumed that he was making a fresh start in business and that his decisions were uninfluenced by the existence of previously constructed fixed plant. Now we must turn our attention to those unforeseen events which compel entrepreneurs to readapt their course of action in mid-stream.

In the original formulation of a production plan the definiteness of the entrepreneur's expectations (i.e., the degree of concentration around the "most probable" price) is of great importance in determining the character of the plant which will be constructed. But definite expectations and the correct anticipation of future prices need not be more than remotely connected.¹⁷ Mr.

¹⁷ See O. Morganstern, "Vollkommene Voraussicht und Wirtschaftlichen Gleichgewicht," *Zeitschrift für Nationalökonomie*, Vol. VI.

Keynes has rightly said that "our knowledge of the factors which will govern the yield of an investment some years hence is usually very slight and often negligible."¹⁸ It is not surprising, therefore, that unforeseen or incorrectly anticipated events are continually occurring.

Errors in forecasting may be due to misinformation, to insufficient information, or to incorrect interpretation of available information. Any of these errors would create a discrepancy between expected prices and actual prices which, sooner or later, would require a readjustment of production plans.¹⁹

The entrepreneur may become aware of unforeseen circumstances by degrees, his horizon remaining at a constant distance from him in time;²⁰ or new vistas may suddenly open to him. Where new conditions of minor importance unfold themselves continually, the watchful entrepreneur will be able to adjust his plant without serious loss of revenue or impairment of capital. A small amount of flexibility will permit slight changes in the rates of depreciation, maintenance, output, etc., sufficient to allow for "emerging" expectations. This is,

¹⁸ J. M. Keynes, *The General Theory of Employment, Interest and Money* (New York, 1936), p. 149. In a somewhat more cynical vein Mr. Keynes remarks farther on: "Most, probably, of all our decisions to do something positive, the full consequences of which will be drawn out over many days to come, can only be taken as a result of animal spirits—of a spontaneous urge to action rather than inaction, and not as the outcome of a weighted average of quantitative benefits multiplied by the quantitative probabilities. Enterprise only pretends to itself to be mainly actuated by the statements in its own prospectus, however candid and sincere" (*ibid.*, pp. 161-62).

¹⁹ We are making the implicit assumption here that all future events are determinate from full knowledge of past events.

²⁰ J. Tinbergen, "The Notion of Horizon and Expectancy in Dynamic Economics," *Econometrica*, Vol. I, No. 3.

in effect, the case of an entrepreneur whose expectations are fulfilled; for the expectations of an entrepreneur may be likened to the vision of a nearsighted man walking along a street. Objects near to him are distinct, so that his reactions to them are definite. More distant objects are blurred, and his knowledge of them is vague. As he proceeds, the formerly distant objects become distinct, and new objects loom up hazily farther off. Our nearsighted individual is not troubled by his poor vision unless rapidly moving objects suddenly cross his path. Nor is the entrepreneur caught unawares unless rapid changes occur which affect that part of his production plan which is near to him in time.

Fluctuations in demand or in cost, of the seasonal variety, occur regularly in time and with fairly constant amplitude and are therefore likely to be well within the horizon of the entrepreneur unless he is exceptionally "blind."

Irregularities in cost, such as those mentioned earlier in this chapter, would not *all* be so easily predictable. Long-range trends in population or gradual tendencies in the technical efficiency with which a resource was used, though they could not be foretold with absolute accuracy, would at least be of the "emergent" variety. But changes due to political upheaval or to technological innovations and discovery would be more likely to appear suddenly and unexpectedly. As an illustration of how any sudden change in cost might be expected to influence the production plan of a going concern, we now turn to a brief study of technological invention and plant use.

We have emphasized repeatedly in this essay that the value of any resource is determined by its expected future yield. The original cost of a fixed resource should only influence production plans when the resource is still on paper. After it is bought or constructed, its cost price can have no more than historic interest, so far as production is concerned.²¹ A fixed resource (as, for that matter, any other resource) should be used so that the anticipated addition to direct cost associated with the use of a marginal unit of its services will equal the anticipated additional revenue derived by employing the marginal unit. In the perfectly competitive case (which we are still considering) marginal revenue must be equal to average revenue or price. The resource, then should be used in such a way that anticipated marginal cost equals the price that is expected to prevail.²²

Investment in fixed equipment should plainly not be undertaken unless it is anticipated that the quasi-rents accruing to the resource will cover its original cost plus interest on unamortized cost.²³ But once the investment is made, it will always be profitable to use the equipment as long as the direct cost of using it is recovered. A cost-saving invention has the effect of reducing the quasi-rents on existing equipment with which it competes by reducing the price of the product. Thus, for example, a

²¹ It is accepted accounting practice to carry any asset on the books of a concern at cost less depreciation (including obsolescence). This maybe seriously misleading in some circumstances. (See pp. 103 ff.)

²² See R. F. Harrod, "Doctrines of Imperfect Competition," *Quarterly Journal of Economics*, May, 1934, and A. P. Lerner, "Statics and Dynamics in Socialist Economics," *Economic Journal*, June, 1937.

²³ See A. Marshall, *Principles of Economics* (London, 1930), p. 424, n.

new type of Diesel engine would reduce the rental value of a competing gasoline engine as long as the average total unit cost (i.e., fixed plus direct cost) of the Diesel engine was less than the average total unit costs of the gasoline engine, but it would still be profitable to continue using the gasoline engine.²⁴ If the average total unit costs of the Diesel engine were less than the *direct* costs of operating the gasoline engine (that is to say, if quasi-rents on the gasoline engine became negative), it would be profitable to scrap the gasoline engine, replacing it with a Diesel engine. The higher the scrap value of the gasoline engine the sooner would it be profitable to substitute the Diesel engine. Interest on its scrap value is a direct cost of keeping the gasoline engine.²⁵

The striking similarity between appropriate resource use in a socialist and a perfectly competitive capitalist economy is worthy of mention. The well-run socialist economy would always plan to use resources so that marginal cost equals price.²⁶ The capitalist entrepreneur always plans to use resources so that marginal cost equals marginal revenue; but since marginal revenue always equals price under pure competition, the two systems would arrive at the same formal result, though

²⁴ Assuming, still, pure competition. In a monopoly the difference would be absorbed by monopoly revenue on the Diesel engine, but the same principle would apply.

²⁵ If the reader does not at once see why this should follow, it will become clear as soon as he reflects that salvage value of a capital good is an index of the extent to which it is transferable to another use. The cost of using a transferable resource is the value sacrificed in alternative usage.

²⁶ See O. Lange and F. M. Taylor, *On the Economic Theory of Socialism* (Minneapolis, 1938), and Lerner, "Statics and Dynamics in Socialist Economics," *op. cit.*

by very different means. It is only when there is some degree of monopoly in a capitalist economy that resource use would differ from resource use in a properly managed socialist economy. The semimonopolist would equate marginal cost and marginal revenue rather than marginal cost and price; and price would always be higher than under socialist management, whereas output in the industry would be less.²⁷

Other unanticipated cost changes are on a par with technological invention. All cost changes make themselves felt through changes in the rental value of existing capital goods. They also bring about readjustments in the technical methods of production through time. That is to say, if for some reason one resource becomes relatively cheaper, the "law" of variable proportion will make it profitable to use relatively more of that resource in future production. Relative cost changes making possible lower product prices ordinarily increase the volume of sales (at least if the elasticity of demand for the product is greater than zero), so that the entrepreneur will plan larger future output (through the duplication of plant) as well as relative changes in the technical methods of production.²⁸

Unanticipated changes in relative demand are equally disequilibrating to production plans. An unexpected increase in the demand for a product will raise the rental value of existing capital goods. It will make the building

²⁷ See Fig. 2 (p. 38).

²⁸ See Professor Hicks's excellent discussion of the substitution effect of relative price changes on production in *Value and Capital* (especially chap. vii).

of new ones appear profitable (provided the increase in demand is expected to last), and it will bring back into use marginal equipment which formerly was obsolete. An unexpected downward shift in demand, on the other hand, will lower net return on all fixed equipment. It will make obsolete marginal equipment which was profitably used under previous conditions. The only difference between demand changes and cost changes is that the former have a more evenly distributed effect on the use of the fixed equipment of a plant, whereas the latter affect the use of certain kinds of equipment more than others. In other words, the income effect on production plans is more important when demand changes unexpectedly. The substitution effect is uppermost when unexpected cost changes are involved.

The trade cycle presents a very special problem in production-planning owing to the fact that it is neither a strictly periodic phenomenon nor a trend. Information about fluctuations in the level of production is generally both faulty and insufficient. Most entrepreneurs have come to realize that depressions are not entirely haphazard; but they feel powerless to plan for them, since they do not know how or when they will strike. When unemployment, falling prices, and gloomy-faced businessmen indicate that something has gone wrong with production, the entrepreneur is not sure whether he should expect conditions to worsen, to remain the same, or to improve. His reactions and his expectations become confused and uncertain. A new invention is something which the entrepreneur understands and can appropriately deal with through price reduction. But the

downward phase of a business cycle is intangible. It undermines business and saps profits for no reason that the entrepreneur can clearly comprehend. His inclination to cut costs, reduce output and lower prices, in some mixture, is restrained by the hope that the falling-off in demand may be a temporary aberration. Fears of "spoiling the market" and of "cutthroat competition" add to his reluctance to face the new situation through readjustments in his price policy.²⁹

One of the most distressing aspects of the trade cycle is that it tends to intermingle with, and sometimes even to obliterate, all other price tendencies in the consciousness of the entrepreneur. In the upward phase of the cycle optimistic expectations spread contagiously, snowballing productive activity to boom proportions. Investment in durable goods is hurried, so that the benefits of boom prices may be enjoyed without the penalty of fixed plant built at prosperity costs. The demand for capital goods increases at an accelerating pace not only because optimism is infectious but also because an increase in the demand for consumer goods exerts an amplified pressure on the demand for capital goods.³⁰

²⁹ The following quoted from Professor J. M. Clark was made in connection with seasonal fluctuations in demand, but it applies equally well to business cycles: "The willingness of business men to recognize as sound practice whatever measures may be necessary to promote regularization depends partly upon keeping such concessions safely confined to off-peak business" (*The Economics of Overhead Costs* [Chicago, 1923], p. 167; see also *ibid.*, chap. xxi).

³⁰ The acceleration principle of derived demand which has been elaborated by Professor Clark and by others (e.g., in J. M. Clark, *Strategic Factors in Business Cycles*, [National Bureau of Economic Research, 1935]) points to the fact that the demand for capital goods is composed both of the demand for replacement and of the demand for additional capital goods. If the life

It is a readily observable fact that the optimism of boom periods results in an enormous expansion of plant, much of which proves to be unwarranted in the light of subsequent events. One can only conclude that in such periods production plans tend to become projections of price tendencies detected in the immediate past. The good faith of many entrepreneurs is beyond question, even though the extrapolation of ill-established trends is, of course, bad statistical practice. It cannot be denied, however, that boom periods also foster speculative building which is not based on the expectation that it will be income-producing. Rather, it is undertaken in the hope that a capital gain can be realized through sale before the "bubble bursts."³¹

Capital resources constructed for prosperous times cannot, of course, be used with equal intensity during

of a particular capital goods is (say) twenty years, so that replacements would amount to 5 per cent per year, and if the "normal" rate of growth is 5 per cent per year, the demand for that capital goods would be divided evenly between replacements and new demand. Now let us suppose that the demand for consumer goods undergoes an unaccustomed additional increase of 5 per cent. Then, assuming the entrepreneur expects that the increase in demand will be maintained, and assuming, further, that the increase could not reasonably be accommodated through more intensive plant use or through reduction in inventories, productive capacity would have to be expanded by an additional 5 per cent in order to meet the new demands. This would mean a $33\frac{1}{3}$ per cent increase in the demand for our particular capital good. Telling criticisms have been leveled against the acceleration principle (see E. F. M. Durbin, *Purchasing Power and Trade Depression* [London, 1934]), but there can be no doubt that it has a large measure of validity during the upward phase of the cycle when confidence in future business is unclouded by fears of depression, and when idle resources are not abundant. A change in the rate of growth of demand in consumer goods is almost certain to be disequilibrating.

³¹ The Florida real estate boom of 1926 offers a conspicuous illustration of this point.

times of depression. We have indicated, furthermore, that depressions are often unanticipated, so that radical readjustments must be made in the original plan for their use. On the other hand, considered from the point of view of the individual entrepreneur, it is easy to exaggerate the extent to which capital resources are unexpectedly made idle through faulty business-cycle forecasting. If the business cycle is accepted as a datum (and the individual entrepreneur cannot well do otherwise), the most skilful planning by the entrepreneur best able to predict its course would envisage wide fluctuations in the intensity with which fixed resources would be used. To some extent, plant construction can be planned with variation in plant capacity during the cycle. More often it is profitable to maintain large units of plant and equipment during depression, even though they cannot profitably be used. The most harmful aspect of idle capital resources during a business cycle has to do with a divergence which exists between the social and the private interest (see chaps. vii and ix).

CONCLUSIONS

Our inquiries in this chapter make it possible for us to draw several important conclusions.

1. Even in a purely competitive enterprise economy, where the expectations of entrepreneurs are fulfilled, fixed plant is used intermittently and in varying degrees of intensity.
2. The uneven use of capital resources may be in the best interest of the entrepreneur when economies of large-scale production make it advantageous to invest

in fixed plant despite expected fluctuations in cost and demand.

3. Unexpected changes in cost and demand cause the competitive entrepreneur to readjust his use of resources in line with the new conditions. Unexpected changes may mean that specialized capital goods already in existence will be used more, or less, intensively than before.

4. A unit of fixed equipment which is valueless because the discounted sum of quasi-rents expected to accrue to it is zero or negative should not be called an idle resource, since it is no longer a resource at all. If a unit of fixed equipment has ceased to have value in its original use but still has value in exchange because of some alternative use to which it can be put, it must be thought of as a different resource just as though it had been constructed especially for the new use. Its value in the new use has no relation to its value in the old use. The existence of obsolete equipment has been a source of much unnecessary misunderstanding in this connection.

5. The term "unused capacity" in its everyday sense has no precise quantitative meaning. Fixed resources are capable of rendering services at different rates through time. A particular milling machine may advantageously be allowed to stand idle part of the day or part of the year. The owner of a particular printing press may wisely run it at the rate of one thousand pages per hour one day and ten thousand pages per hour the next. Rates of operation are determined by cost and demand conditions. Estimates of "practical" capacity

are based on some "normal" rate of operation. But "normal" rates are based on past cost and demand conditions which need have no relation to present or future cost and demand conditions. The problem of measuring unused capacity may be likened to determining the temperature, on a day when the temperature is fluctuating rapidly, from a thermometer made of a substance having a high coefficient of expansion with reference to heat.

6. There is no close correlation between unused capacity and waste. An expensive machine used very occasionally may mean a real economy to a firm which might alternatively use other equipment more continuously. Unused capacity may or may not be wasteful, depending, once more, on cost and demand.

Waste, as we shall see in the last chapter, may be thought of in terms of an individual entrepreneur or in terms of a larger social group. It is not likely to have the same significance for both groups. Waste is not synonymous with unused capacity, regardless of the group in reference to which it is defined.

CHAPTER V

ECONOMIC AND INDUSTRIAL INSTITUTIONS AND RESOURCE USE

INTRODUCTORY

IN CHAPTERS III AND IV we studied the economic basis for the policy decisions of the entrepreneur. We abstracted from "irrational" behavior, from monopoly, and from social institutions which might interfere with a smooth-running pricing system just as the physicist abstracts from friction when he is studying the principles of force and of motion. But an understanding of existing social institutions and of monopoly is as essential to a knowledge of waste as is an understanding of air resistance to knowledge of the flight of a bullet through the atmosphere surrounding the earth. This and the following chapter will be devoted to a descriptive and analytical sketch of certain social institutions which are important in conditioning resource use. Special attention will be given those institutions which hamper the competitive price mechanism. Chapter vii will describe the influence of monopoly and price-fixing on the use of resources.

Social institutions are to the entrepreneur what the character of the landscape is to an architect or what the unadorned aspect of a room is to an interior decorator. The production plans of an entrepreneur would differ in different institutional frameworks just as an architect's plan for a house would depend on the terrain in

which it was to be built. To carry the analogy one step farther, the architect, in drawing up his plans, must adapt them in part only to the landscape. Modifications in the appearance of the surroundings are possible at a cost. Similarly social institutions are subject to modification by the entrepreneur. The extent to which they can be modified and the costs of change are matters which must be considered in this and the following chapter. We must also distinguish between institutional changes which can be brought about by the entrepreneur and those which can only be effected through the collective action of a larger social group.

The importance of social customs and institutions as forces conditioning economic activity has long been stressed by sociologists, by Karl Marx and his followers, by German "historical" economists, and by the American economists calling themselves "institutionalists." Professor Hertzler, for example, has said that "the whole life of the community is dominated and regulated by the great fundamental institutions as well as the special and unique institutions that it has developed for its own successful operation and its well being."¹ Veblen in one of his many criticisms of "orthodox" economics asserted that "to any modern scientist interested in economic phenomena the chain of cause and effect in which any given phase of human culture is involved and the cumulative changes wrought in the fabric of human conduct itself by the habitual activity of mankind are matters of more engrossing and more abiding interest than the methods of inference by which an individual is

¹ J. O. Hertzler *Social Institutions* (New York, 1929), p. 26.

presumed invariably to balance pleasure and pain under given conditions that are presumed to be normal and invariable."²

Although the present writer is convinced that "orthodox" economists have been justified in emphasizing the importance of the price mechanism in their study of enterprise economies, it must be conceded that too often they have been guilty of neglecting the social background on which their calculations were premised. They have insufficiently stressed the limited applicability of price mechanics both spatially and in time.

We hope, in this chapter and in the one which follows, to bring out the relationship between institutions and the price mechanism, for, if the pricing system is accepted as a means of making possible an economic allocation of resources among alternative uses, then any institutions which interfered with the pricing system might be looked upon as undesirable. If the costs of changing the institutions were not greater than the advantages to be derived from such a change, one might say that the institution was a source of waste.

It should, of course, be emphasized that institutional evolution goes on continuously whether or not there are conscious human efforts to change them. In fact, it was not until the modern reawakening of Europe in the late fifteenth and sixteenth centuries that there developed institutions at all comparable with those which are taken for granted by liberal economists. "Orthodox"

² Thorstein Veblen, reprinted from "The Place of Science in Modern Civilization" (originally from the *Journal of Political Economy*, November, 1909), in *What Veblen Taught*, ed. Wesley C. Mitchell (New York, 1936), p. 162.

economic theories were built on that framework of institutions which existed in a limited number of semi-democratic countries of the Western Hemisphere from about the middle of the eighteenth century down to recent times. Of the several groups of social institutions which may be distinguished,³ economic, industrial, and political institutions have the most direct bearing on resource use. It is to a study of them that we must now direct our attention.

PRIVATE PROPERTY

Property in the economic sense is a claim, or a right, having reference to some want-satisfying agent. The institution of property is that bundle of accepted customs, sanctions, and regulations which surround property rights.⁴

Property relationships are closely bound up with human relationships. In a slave economy claims having to do with the servitude of the slaves are similar to other property claims. For most purposes, in such an economy slaves could be classed as property (see chap. i, pp. 17 ff.). The feudal system ostensibly abolished slavery, but serfs were tied to the soil by irrevocable bonds. They were obliged to render specified services to their feudal lords. They differed from slaves only in that they had certain recognized rights and privileges

³ The following classification of social institutions has been suggested by Professor Hertzler: (1) economic and industrial, (2) matrimonial and domestic, (3) political (including both government and law), (4) religious, (5) ethical, (6) educational and scientific, (7) communicative (language), (8) aesthetic and expressional, and (9) health and recreational (*op. cit.*, chap. iv).

⁴ See C. R. Noyes, *The Institution of Property* (New York, 1936).

upon which the lord might not (legally) encroach. Property tenure under feudalism was inflexible because one individual rarely was the sole claimant to a piece of property. Transfer was checkmated by hereditary rights. Serfs were in a twilight zone between pieces of property and freemen.

The term "property" under modern *laissez faire* excludes human beings, since, in the main, claims against the services of man are unenforceable at law. The fact that workers are sometimes made virtual slaves through inability to find more than one means of livelihood is deplorable but does not diminish the importance of the institutional change which has taken place.

Customs and laws relating to the use and transfer of property are of nearly equal significance. Absolutely unrestricted use of property has never been permitted in any organized society. It has always been necessary to prohibit uses of property which would be seriously injurious to others. Further restrictions are imposed, even in a *laissez faire* economy, for purposes of conservation or national defense or because of aesthetic considerations. Beyond these roughly defined limitations, however, the possessor of claims to property is empowered by government and legal sanction to use that property or to dispose of it as he pleases.⁵ *Laissez faire* capitalism has abandoned the feudal ties which bound tenants to the land they occupied, as well as hereditary ties such

⁵ See W. Lippmann, *The Good Society* (London, 1937), pp. 184-92, 273-77. In Continental Europe, however, the residual rights not specified by the law sometimes rest with the government.

as primogeniture.⁶ The owners of property now have far more freedom in the use of property as a result of these institutional changes. This has been of incalculable importance from the point of view of productive efficiency. It has meant that property can now be disposed of and acquired more easily; that it can more readily be shifted from one use to another; and that capital accounting is facilitated, since comparable market values are now likely to be available to persons interested in appraising a piece of property. All of these factors made possible a more economic use of resources.

But while the modern institution of property has facilitated more efficient use, it gives no guaranty that resources will be efficiently used, nor does it insure that property or the income from property will be distributed according to any socially desirable "ideal." Indeed, the private ownership of property tends to increase inequality or at least to maintain unequal income distribution, because it gives to property-owners economic advantages over non-property-owners.

The institution of property is plainly outside the sphere of action of the entrepreneur. Whether or not it could be improved by government action, it must be considered as a given condition by him. Waste could only arise if the entrepreneur were guilty of negligence in adapting his production plans to known laws of property ownership.

Most government action with regard to the institu-

⁶ Although feudalism had almost entirely disappeared in England by the end of the eighteenth century, it is a curious fact that the last copyholds were not abolished until 1926 (by the Law of Property Act of 1922).

tion of property would have important ramifications and would affect other economic and political institutions. The net effect, after all the costs (e.g., the possibility of revolution if socialization were considered) had been taken into account, would have to be considered before it could be decided whether there is social waste resulting from the institution of property in its present form.

THE MARKET

The market is an essential institution to any society dependent on a pricing system for resource allocation. As Adam Smith put it, "the division of labor is limited by the extent of the market."⁷ Markets permit the specialization of production by providing organized meeting grounds for buyers and sellers of like commodities. Societies in which production is organized around the household, the tribe, or the manorial estate are less dependent on the market for their existence than economies in which the exchange mechanism is well developed; but they are also less able to maintain a high standard of living.

In medieval Europe trade in the basic commodities and in exotic luxuries took place primarily in fairs, which were held periodically by different towns. Some fairs, such as those in Champagne, were highly organized and operated most of the year. Other fairs were mostly haphazard. Certain towns throughout England and Europe came to be known as "fair towns." Trade was restricted to the confines of the fair, where it was regulated by special fair courts. Medieval trade, however,

⁷ *The Wealth of Nations* (London, 1910), I, 15.

was small in volume and was limited to a relatively small number of commodities.⁸

Present-day commodity, money, and security markets are the modern counterpart of medieval fairs. Traders meet one another either physically or by means of telegraph or telephone to purchase or to dispose of commodities or claims to property. Price adjustments tend to keep prices uniform throughout the market and to equilibrate effective demand with supply available in any given period of time. Each market has developed a complex system of codes and customs governing its operation.

Competitive capitalism has come to rely on organized markets as the focal instrument for maintaining price flexibility and for facilitating the smooth running of the production, consumption, and distribution of commodities and for the spreading of risks. The effectiveness of the markets has been greatly enhanced by modern means of communication, which have enormously expanded the market areas. The development and widespread use of negotiable instruments is another factor which has broadened the significance and usefulness of markets. Finally, markets have come to have a stabilizing influence on the economy through the extensive use of hedging by means of forward buying and selling of commodities and securities.⁹ On the other hand, the growth of monopoly, the prevalence of price agreements,

⁸ See A. P. Usher, *Industrial History of England* (Boston, 1920), chap. vi, and Max Weber, *General Economic History* (London, 1927), pp. 123-35, 220-22.

⁹ A. Marshall, *Industry and Trade* (3d ed.; London, 1927), Part II, chap. v.

the collusive manipulation of markets for speculative ventures, and the tendency of governments to interfere with automatic price adjustments in important markets have dulled their effectiveness. (See section on "Employer Organizations and Labor Unions" in this chapter and chaps. vi and vii.)

Changes in market organization are ordinarily brought about through the collective action of members of a trade association or through government action. But ineffective markets are more likely to result from collusion or government price-fixing than from careless organization. The waste which might arise from poor markets will, therefore, more appropriately be considered under other headings.

THE MODERN CORPORATION

"The corporation," as defined by Messrs. Berle and Means, "is a form of organization which enables a group of individuals to act under a common name, in carrying on one or more related enterprises, holding and managing property and distributing the profits or beneficial interest in such enterprise or property among the associates."¹⁰

"Incorporation" is a franchise granted by a government and protected by the law. The rapid rise of the corporate form to prominence during the industrial revolution, along with the development of the principle of limited liability, has made possible vast aggregations of industrial capital and has brought about several modifications in the structure of property ownership.

¹⁰ A. A. Berle, Jr., and G. C. Means, "Corporations," *Encyclopedia of the Social Sciences* (New York, 1935), IV, 414.

The enterprise system as it emerged in England and the United States in the late eighteenth and early nineteenth centuries was characterized by relatively small businesses owned and operated by a single entrepreneur and his family. Early incorporation often included some special privilege or monopoly which was the incentive leading the entrepreneur group to obtain a charter. Limited liability was not common and was not especially in demand, since there were few creditors and few stockholders. With the development of railways, large-scale textile mills, and other industries requiring sizable capital investments, it became necessary for entrepreneurs to seek financial backing from sources outside the family circle. It was then that limited liability came to play such an important part. Outside investors were willing to take the chance of losing the money they invested in one corporation in the hope that they would be rewarded with profits, but they were naturally hesitant to risk their entire fortune unless they were intimately familiar with the management of the undertaking. Without limited liability giant corporations, with thousands of stockholders, would never have been possible.

If mass production is the product of giant corporations, so, also, is the impersonalization typical of many industries today. Labor no longer has close contact with management; and management is no longer under the immediate supervision or control of the equity holders. The corporation has been given independent legal entity, so that its assets are not owned directly by anyone. Stockholders merely hold rights to participate in earnings or in the distribution of assets in case the

corporation is dissolved. Creditors have claims to the assets only as a security in case of bankruptcy. Management directs their use but has no claim to them.

Legal devices, such as limited issues of voting stock, pyramided holding companies, voting trusts, and the like, have accentuated the growth of huge corporations and have hastened the divorce of ownership from control.¹¹

Wastes arise when corporations are expanded in order to enhance the prestige of the managers rather than to take advantage of economies of large scale. Large corporations are more subject to bureaucratic inefficiency and to stagnation than are small ones. These wastes are harmful to the individual firms and to society.

When the corporate form is used to facilitate monopoly control and financial gain through pseudo-legal manipulations, it leads to a wasteful use of resources from the social point of view, but the individual firm may be benefited (see chap. vii).

MONETARY AND FINANCIAL INSTITUTIONS

A "medium of exchange" is one of the first economic institutions to develop in any society. Some universally acceptable commodity, preferably one which is divisible into small units and which is durable, is adopted as an aid to exchange. The same commodity or, in some instances, another one is chosen as a "measure of value." Finally, even in unorganized societies, certain standard

¹¹ See A. A. Berle, Jr., and G. C. Means, *The Modern Corporation and Private Property* (New York, 1936).

commodities are held as "stores of value."¹² Modern currency systems, for all their elaborateness, are based on the same three fundamental needs. The only essential difference between modern currency and primitive currency is that modern currencies, for the most part, are systematically issued and regulated by central government authorities, whereas currencies in primitive societies were more haphazard. But present-day currency problems (at least in the British Empire and in America) are of relatively minor importance compared with the broader aspects of monetary policy which deal with credit, credit institutions, and credit control.

The principal function of banking institutions is their serving as clearing-houses for debts (or credits, looked at from another point of view). Central banks often are charged with the added responsibility of regulating the supply of money. Modern commercial banks bring borrowers and lenders together without the inconvenience which was experienced in the days when merchants had to borrow and lend by means of private transactions. They are able to extend credit far in excess of cash balances, since adequate cash reserves on deposit need only amount to a fraction of total deposits outstanding. But a single bank is unable to expand credit materially beyond the cash balances it has acquired unless the system as a whole is doing likewise.¹³

¹² Classical economists in the interest of simplification usually assumed money to be "neutral." This has sometimes led people to the erroneous conclusion that money as a store of value developed later historically than the other uses of money. See P. N. Rosenstein-Rodan, "The Co-ordination of the General Theories of Money and Price," *Economica*, August, 1936.

¹³ For a compact exposition of this well-known fact see O. M. W. Sprague, "Commercial Banking Theory," *Encyclopedia of the Social Sciences* (New York, 1935), II, 422.

Such a banking system, even if it is not the cause of violent fluctuations in the volume and velocity of credit, accompanied by corresponding fluctuations in prices and production, at least does not prevent them from occurring. The gold-standard mechanism of adjustment which theoretically should have checked serious fluctuation has been inadequate. As a means of aiding the "automatic" process of the gold standard, central banks were vested with power to manipulate the discount rate and to purchase and sell securities on the open market. When these also proved to be insufficient, more drastic measures were experimented with. The price of gold was varied, foreign exchange rates were controlled through specially established exchange equalization funds, and large-scale public works were undertaken on money borrowed by the government from the banks at low interest rates.

Meanwhile, the banking systems of the Western world have become instruments of government policy. The discretionary power of authority has been substituted for rules embodied in law. A managed system, unlike an automatic one, should be guided by objectives more positive than mere smooth operation. Credit control must strive for a constant price level, a constant quantity of money, a constant quantity-times-velocity of circulation of money, stable exchanges, "full" employment, or some other goal. Yet it would be difficult to say definitely what objectives this country or any other is pursuing through monetary regulations. One gains the impression that objectives shift from time to time and are conflicting at a given time. But since official ad-

herence to an objective is rarely voiced, the field is open to surmise.¹⁴

Credit instability leading to wide fluctuations in price, whether it be due to insufficient control or too much control, clearly is seriously disequilibrating to business-planning (see pp. 83 ff). It is undesirable, since greater stability of credit would lead to more efficient resource use and to less human suffering, owing to unemployment and destitution. Our monetary and banking institutions are surely in need of careful scrutiny. Unfortunately, however, conflicting recommendations for change cannot be reconciled until there is a more general agreement as to the cause of business fluctuations. One sort of monetary and banking institution might be desirable if it could be established that monetary instability is the prime cause of the cycle. Other kinds might be preferable were it possible to demonstrate that, say, psychological forces, our political structure, capitalistic production, or extraneous climatic conditions were predominantly responsible. It is evident that our monetary and financial institutions are not perfect, but they should not be called wasteful unless an alternative system can be demonstrated to be superior and unless the costs of changing to the alternative system are less than the benefits which would be derived from it. In any case, these are institutions which are subject to the control of governments rather than of individual firms.

¹⁴ For a partial statement by the Federal Reserve Board on policy objectives see the *Federal Reserve Bulletin*, April, 1939, p. 255, and *ibid.*, May, 1939, pp. 365-66.

ACCOUNTING

Accounting is the internal intelligence service of business. In Professor Paton's more exact language it is that "body of principles and the technical mechanism by means of which the economic data of the particular concern are classified, recorded, and periodically presented and interpreted, for the purpose of effective control and administration."¹⁵ The businessman depends on the accountant for cost data (including imputed costs), for information regarding depreciation and obsolescence, for property valuation, for measures of gross and net revenue, and for a picture of the financial position of the firms. Obviously, the effectiveness of production policies is substantially influenced by the reliability and the adequacy of data submitted by the accountant. Production plans rely very largely on the estimates of cost, including depreciation presented by the accountant.

Accounting procedure has been developed pragmatically by men skilled in the techniques of recording business operations. Standard practices have been adopted to make accounts more generally intelligible and to minimize fraud. Simplifying assumptions have been made where greater accuracy appeared to be too costly or impossible to achieve. The danger of standardization and simplification is that it tends to become traditional and inflexible in a changing world. Certain generally accepted accounting practices lead to a misrepresentation of economic facts which, under some circumstances, are prejudicial to successful production-planning. (1)

¹⁵ W. A. Paton, *Essentials of Accounting* (New York, 1938), p. 3.

Fixed assets, and sometimes inventories, are carried on the books at original cost less depreciation. (2) Assets are usually depreciated according to the "straight-line" principle. (3) Finally, in computing costs, total costs (including imputed costs) or average direct costs are recorded, rather than marginal costs. Let us see how these accounting practices can lead to faulty planning and to waste.

1. Knowledge of a change in the value of a fixed asset is important to persons responsible for production-planning because depreciation charges, which are rightly considered a current cost, should be based on the current values of fixed assets. The purpose of depreciation is to ascribe to "cost of sales" an amount commensurate with the value-deterioration of the fixed assets used in the production of output; and the correct measure of value-deterioration is in terms of value at the period of use, not in terms of original cost. Original cost less an allowance for depreciation based on expectations at the time when the fixed resource was acquired may not, in fact, indicate the true value of an asset even at the time of purchase.¹⁶ It is still less likely to be meaningful some time after the acquisition of the asset. Cost of replacement is a better, but not a perfect, approximation of true economic value determined by earning power. It comes closest to being satisfactory when there is an established market for the asset. It is least helpful when the asset is not augmentable except at rapidly increasing unit costs.¹⁷ Revaluation according to some general

¹⁶ See K. MacNeal, *Truth in Accounting* (Philadelphia, 1939), chaps. i and xii.

¹⁷ For the practical pros and cons of this question see *ibid.*, and J. B. Canning, *The Economics of Accountancy: A Critical Analysis of Accounting Theory* (New York, 1929), chaps. x-xiv.

purpose price index is another method the use of which has been proposed for times of rapid price-level changes.¹⁸ The difficulty of finding a reliable index which can be kept up to date, together with the fact that revaluation according to an index number does not obviate the need for relative price adjustments, detract from its usefulness as a method of valuation.

Waste arises when the method of valuation used distorts the true economic value, and hence current depreciation charges, so as to bring about an uneconomic use of the fixed resource. That is to say, an alternative method of valuation would bring about a different and more profitable rate of utilization of the resources.

In connection with the problem of the valuation of fixed assets it is also necessary to raise the question of "wear-and-tear" depreciation as distinct from "time" depreciation. It is accepted accounting practice to include deterioration from wear and tear in use along with physical deterioration which would take place irrespective of use (e.g., rusting iron, rotting wood, etc.) and with obsolescence due to technical innovation or shifting demand in depreciation charges.¹⁹ But, once a fixed resource is built, it constitutes a current cost only to the extent that it is deteriorated by use. Depreciation which is a function of time and not of rate of output is wrongly included in the operating statement as a "cost of sales." Its presence there may cause the entrepreneur to use the resource too intensively or too sparingly be-

¹⁸ H. W. Sweeney, *Stabilized Accounting* (New York, 1936).

¹⁹ See J. M. Keynes, *The General Theory of Employment, Interest and Money* (New York, 1936), "Note on User Costs," appendix to chap. vi., and R. F. Fowler, *The Depreciation of Capital* (London, 1934), chaps. i-III.

cause of its apparent effect on relative cost. Similarly, cost accounting may be misleading if the entrepreneur fails to distinguish between overhead charges and true costs of production.

Current assets should also be valued at their current market price rather than at original cost if confusion in production-planning is to be avoided. The principle of "first in, first out" and the convention of evaluating inventories according to "cost or market, whichever is lower," are erroneously regarded as "conservative." They may both lead to a misrepresentation of the true cost situation.²⁰

2. The use of the "straight-line" method of depreciation is customary because it is held desirable that depreciation be charged to output at a uniform annual rate. But ordinary depreciation formulae do not take into account the fact that the present worth of a future sum of money should be discounted. Discounting is necessary owing to the fact that any sum of money could be invested at interest and allowed to accrue until the date of maturity. Depreciation charges based on the straight-line method tend to exaggerate true costs²¹ and to mislead the entrepreneur.

3. Periodic analysis of accounts lends itself very readily to the calculation of average costs. On the other hand, those costs which are spoken of by economists as "marginal" or "incremental" costs are not easily discovered from ordinary accounting data. They are, in fact, rarely, if ever, computed by accountants. "Mar-

²⁰ MacNeal, *op. cit.*, chaps. xi and xiv.

²¹ See e.g., *ibid.*, chap. vii.

ginal cost" may be defined as the increment in total cost corresponding with a small change in output, whereas "average cost" is simply the total cost of any given output divided by the units of output.²² So long as marginal costs remain constant as output varies, it is obvious that average direct costs (i.e., average operating costs if they are defined correctly) will be equal to marginal cost, and there is no problem of additional calculation. If marginal costs vary with output, however, marginal cost will not be equal to average cost except at a single output. (See *LAC* and *LMC* in Fig. 2, p. 38.)

For purposes of production-planning it is marginal cost which is significant. That is to say, the entrepreneur, in order to maximize expected net revenue, will plan to expand output up to the point where the revenue resulting from the sale of an additional unit of output will just equal the cost of producing that unit. The entrepreneur will be unable to tell what output is most profitable if average costs are alone known to him, since marginal cost at any output may be higher or lower than average cost at that output. In determining the desirable level of output the entrepreneur wishes to equate *marginal* cost with marginal revenue, for only by so doing will he maximize net revenue (see pp. 33 ff). Average cost is a crude and blunt instrument, compared with marginal cost, when production-planning is concerned.

Accountants shy away from marginal cost partly out of habit, partly because it is difficult and expensive to

²² Expressed mathematically, marginal cost is the derivative of total cost, whereas average cost is equal to total cost divided by output.

estimate in advance, partly because the computation of marginal cost requires a certain amount of statistical analysis which the accountant asserts is not in his province, and partly because of other more or less valid reasons. Of recent years, however, there has been increasing evidence that businessmen are becoming interested in marginal cost.²³ The use of average cost in business is wasteful when average cost differs from marginal cost. In that case the most profitable rate of operation will not be achieved, assuming the businessman acts solely on the basis of information supplied to him by the accountant.

The three accounting practices leading to a misrepresentation of economic facts which we have just discussed need not result in waste, of course, if businessmen see the dangers implicit in them and make allowance for the errors which they conceal. There is reason to believe that alert businessmen do, in fact, reinterpret accounting data so as to reduce the errors which they are likely to contain. Nevertheless, certain changes in standard accounting practice would seem to be in order unless it can be demonstrated that the costs of more precise methods would more than offset the advantages to be derived from more exact planning.

EMPLOYER ORGANIZATIONS AND LABOR UNIONS

No discussion of the impact of economic and industrial institutions on resource use would be adequate

²³ The importance of marginal costs in business is well expressed by J. M. Clark in the *Economics of Overhead Costs* (Chicago, 1923), chap. ix. A method for calculating them has been developed by J. Dean, *The Statistical Determination of Costs with Special Reference to Marginal Costs* (Chicago, 1936).

without some mention of employer organizations and labor unions. Our discussion will be brief, however, since we are primarily interested in them as vehicles for exercising monopoly control (see chap vii).

Employers have been induced to form interfirm organizations for three reasons: (1) they have united to prevent the formation of labor unions, or to prevent unreasonable demands by labor unions once they are formed; (2) employers in particular trades have come together for the purpose of promoting trade through improved public relations and technical research; (3) employers have organized so as to control the output or prices in a particular industry with a view to maximizing their monopoly gain. These three motives are often mixed, and it is sometimes difficult to determine the true purpose of an organization which may differ widely from its stated aim.

Organizations having primarily to do with labor relations are generally called "employers' associations." Many such associations were aggressively anti-labor-union in the later part of the nineteenth century in the United States.²⁴ In the twentieth century the anti-union activities of employers' associations have at least been less overt. Trade agreements and negotiations have largely taken the place of open warfare. Nevertheless, it must be recognized that most employer associations in this country are opposed to the union movement. This is in marked contrast with English and European employers' associations, which usually

²⁴ E.g., The Stove Founders National Defense Association (see C. E. Bonnett, *Employers Associations in the United States* [New York, 1922]).

prefer dealing with a stable and well-organized labor market on the ground that continuity of employment yields larger profits in the long run.

Trade associations are ordinarily formed to further the interests of a particular trade or industry. Many activities, such as industrial and commercial research, lobbying for favorable legislation, and the influencing of public opinion in favor of the industry, are undertaken by trade associations, as they can be performed more efficiently by a group than by a single firm. Statistical information regarding costs, prices, and output in the industry is also circulated among members of the association. Such information is sometimes selected and colored so as to afford a *sub rosa* method for "stabilizing" prices and controlling output where more open forms of agreement would be prosecuted.²⁵ The anti-trust laws in the United States have forced many monopolistic practices to the cover of clandestine trade-association activities. One must not overlook the fact, however, that many such organizations perform perfectly legitimate and highly useful functions.

Employer organizations whose avowed purpose is some kind of "sharing of the market" are increasingly common in the more important industries in Europe, where they are variously known as "cartels," "syndicates," or *comptoirs*. The group generally fixes product prices and apportions output among the members but does not exercise any internal or financial control over the individual firm.²⁶ Industrial pools and trusts were

²⁵ A. R. Burns, *The Decline of Competition* (New York, 1936), chap. ii.

²⁶ See K. Wiedenfeld, "Combinations, Industrial," *Encyclopedia of the Social Sciences* (New York, 1935), III, 664-74.

beginning to eliminate price competition in much the same way in the United States before the passage of the Sherman Anti-trust Act (1890). Since then price agreements and other forms of collusion in restraint of trade have been illegal. This has meant a greater number of mergers, the more extensive use of holding companies, financial control by banking houses, and illegal verbal agreements, all of which have partly, although not completely, accomplished the same result.²⁷

Labor unions have, for the most part, developed concurrently with employer associations. The expansion of one has spurred the growth of the other. Each is looked upon as a means of protection from the other.

In Continental Europe and in England organized labor movements have been strongly political in character. Most European labor parties are union dominated and are socialistic. A large fraction of the working population is unionized. In the United States, on the other hand, unions have been predominantly non-political. Up until the last decade union membership was relatively small and was confined principally to the skilled crafts.²⁸ The Committee on (now Congress of) Industrial Organization made the first successful attempt to organize large groups of unskilled laborers and to make labor in this country politically minded. Despite recent changes, however, high wages and shorter hours remain the primary objective of the bulk of organized labor in America. Workingmen, naturally, would like to occupy more prominent positions in the

²⁷ See Burns, *op. cit.*, chap. iv.

²⁸ Coal mines are a conspicuous exception.

community; they often seek better working conditions, and many of them would like a bigger hand in management. But these are considerations of secondary importance. Strikes, picketing, boycotts, closed shops, check-offs, high initiation fees, shop rules, apprenticeship requirements, and the like are the instruments which unions most frequently employ in their struggle for higher wages and shorter hours. Some of these practices benefit one group of laborers at the expense of others; some lead to monopolies in labor fully as powerful as monopolies in industry. Some unions have fostered smooth-running and efficient production through an intelligent understanding of business problems; others have been obstructionist and corrupt.

Generally speaking, unions and employers' associations impede the functioning of the competitive industrial process. In so doing, they tend to cause a cleavage between the private and the social interest. It is possible, therefore, that they may lead to social waste without leading to a corresponding private waste. Of this we shall have more to say in chapters vii and ix.

CUSTOMS AND TRADITIONS IN BUSINESS

Traditions probably play a more important role in industry than is generally realized. Very often technical processes, standards, hours of work, and the like are accepted not because of careful planning based on a desire to minimize costs but rather because they have been customary ever since any one in the firm can remember. Complacent conformity to tradition is the easiest path to follow in business as it is everywhere else.

A well-established firm can coast for many years, without being bankrupted, by living on its reputation and on surpluses stored up through past initiative. The tendency of such firms is to continue to use equipment after it should properly be replaced and either scrapped or placed in reserve. Thus, certain fixed resources are used more intensively than the best interest of the firms would dictate. Physical appearances are allowed to conceal the fact that economic conditions have changed. Private and social waste arises from an unideal allocation of resources due to imperfect adaptation to changing conditions.

The continued use of obsolete equipment is an example of how waste may manifest itself through the excessive utilization of a fixed resource. In other instances adherence to customary policies may lead to wasteful idleness. In an industry which is becoming more capitalistic,²⁹ for example, there will come a time when it will be profitable to change from a single- to a double- or a triple-shift basis of operation.

Multiple-shift operation often results in higher wage rates and other increases in current costs per unit of output. Thus, it is not infrequently more efficient, and hence more profitable, to leave fixed equipment idle part of every twenty-four hours even if more fixed equipment is needed to produce a given output than would be required if it were in constant use. As an industry becomes more capitalistic, however, there comes a time when the ratio of current outlays (per unit of

²⁹ I.e., where "capital intensity" (to use Mr. Kaldor's expression) is increasing. See N. Kaldor, "Capital Intensity and the Trade Cycle," *Economica*, Vol. VI (new ser.), No. 21.

output) to initial capital outlays (per unit of output) becomes so small as to render the increased current costs of full-time operation less significant than the savings in capital investment made possible by the full time use of fixed equipment. At that point it becomes profitable to change from single- to multiple-shift operation. The increased mechanization which has taken place in the textile industry of recent years suggests that it might be profitable for it to increase the number of shifts per day. If that is so, and the industry has failed to change its method of operation because of custom, one might properly say that the industry is operating wastefully. Equipment is used less intensively than a program for maximizing profit would demand, if this hypothesis is correct.

Customary behavior may result in wasteful resource use in a variety of ways, but failure to make the proper adjustments to changing conditions is a characteristic common to them all.

CHAPTER VI

POLITICAL INSTITUTIONS AND RESOURCE USE

THE economic and industrial institutions of the democratic Western world, though they vary a great deal from country to country, are enough alike so that it has been possible for us to speak of them in more or less general terms. Such a procedure would obviously be misleading in connection with political institutions. Limitations of space, not to mention the inadequacy of the writer's knowledge, compel us to focus our attention on the political institutions in a single country, the United States. In drawing attention to the political forces which modify and delimit the use of capital resources in the United States, we can do little more than enumerate and classify. It is hoped, however, that even a cursory sketch will suffice to bring into relief the commanding position which political institutions occupy in conditioning resource use.

AMERICAN DEMOCRACY

Lord Bryce defined democracy as "that form of government in which the ruling power of a state is legally vested, not in any particular class, or classes, but in the members of the community as a whole."¹ In the United States democracy has meant a representative federal government based on a written constitution. The three

¹ J. Bryce, *Modern Democracies* (New York, 1921), I, 20.

branches of government—legislative, executive, and judicial—were each assigned distinct fields of action by the constitution. Each served as a check on the other. All adult citizens not guilty of criminal behavior or not proclaimed mentally incompetent are entitled to participate in government by means of the ballot. The citizen is free to voice his opinion and to worship in whatever religion he chooses. The person and property of citizens are constitutionally protected from encroachment without “due process of law.” Although majority rule is recognized, the rights of the minority may not be tyrannically violated. Hasty and ill-considered change is made difficult by the judiciary, which has come to pass on the constitutionality of controversial legislation. Changes in the constitution are possible only through popular referendum. Excessive centralization of government is checked by the rights of the semi-autonomous states.

The American system of government is based on the belief that the well-being of the individual is itself an end. The state is looked upon as a means of promoting the well-being of an aggregation of individuals. No independent sanctity or virtue is claimed for it. With minor exceptions (e.g., in connection with the use of habit-forming drugs) every individual is believed to be a better judge of his own wants than any other person or group of persons. The *summum bonum* is to be achieved, therefore, through a maximum of individual freedom of action consistent with behavior which is not predatory or antisocial.

The shortcomings of American democracy, in terms of

its own objectives, have been numerous. Universal suffrage has been prevented in some states by poll taxes, literacy tests, or other devices designed to exclude particular races or social classes. Since freedom refers to the unrestricted use of the power or wealth one possesses, striking inequalities in wealth and power have given the term "freedom of action" a very different significance for different individuals. Thus the notion of a maximum social good through independent individual behavior loses much of its cogency. The development of political parties has brought with it the "spoils system" and widespread political corruption. The democratic process, which is praised for its caution and stability, may also be condemned for its sluggishness in adaptability to change. National emergencies, such as wars and lasting depressions, have resulted in an expansion of the functions of government and in a degree of centralization of government not contemplated by the founders of the system or compatible with its philosophy. The power of state and municipal government has diminished, while the powers of Congress and the president have greatly increased. Centralization has nourished the growth of "pressure groups," representing special interests in the community. These groups seek, by agitation and by promises of support or opposition in elections, to promote legislation furthering some special interest. Too often legislators are influenced by the political strength of the "pressure groups" rather than by the merits of the cause. Another concomitant of centralization and of expanded government activity is the growth of bureaucratic inflexibility and inefficiency.

Democracy in America has never been carried over into the industrial field. The management of industry has, for the most part, been in the hands of those persons holding the title to corporate property or their salaried employees. The trend has been toward a separation of ownership from control.² It has been asserted by some that holding a job in a firm should properly entitle the wage-earner to a voice in the management of the firm.³ This view has not found wide acceptance in the United States. A trend, however, away from laissez faire capitalism and in the direction of state socialism has been visible at least during the past decade. Legislative restrictions placed upon the use of resources by the entrepreneur have increased. The complete control and ownership of some industries has been undertaken by local and central government authorities. Government is rapidly becoming a participant and "interventionist" in industry rather than a mere policeman. The full impact of such a trend on resource use is not yet determinate. It is not even clear what effect increased government ownership will have on democracy. It may, on the one hand, strengthen popular government by diminishing inequalities and special privilege. On the other hand, it may intrench and magnify the power of political groups to the point where elections are reduced to a formality.

Democracy offers a political framework broad enough to encompass many different kinds of industrial organi-

² A. A. Berle, Jr., and G. C. Means, *The Modern Corporation and Private Property* (New York, 1936).

³ See Beatrice and Sidney Webb, *Industrial Democracy* (London, 1914).

zations. Its effect on resource use, therefore, is indirect and not predictable in general. We have thought it desirable to give this brief outline of the American form of government, however, since contained in it are the objectives and ideals toward which responsible people in this country are directing their efforts. It is impossible to determine where waste is to be found unless the existing situation is compared with a situation which is held to be preferable.

LAW

The administration of justice according to the law is a vital function of the state and nation. Without a system of laws and law enforcement chaos would reign and concerted action would be impossible. For our purposes in this essay it is not of primary importance that the United States took over the most of the features of the English common law rather than the civil codes of the Latins; we need not discuss the organization of the judiciary in the United States; nor will it be necessary for us to go into such distinctions as those between civil and criminal procedure or between common-law cases and cases in equity. It is important, however, that we recognize the existence of a well-established legal system by means of which both statutory and unwritten laws may be interpreted and enforced. It is also desirable that we distinguish, on the one hand, between legal procedure and the content of the law and, on the other hand, between laws which are regulatory of human relationships of a universal and permanent character and specialized legislative enactments pertaining to social and economic needs.

The rules of legal procedure (adjective law) need only hold our attention to the extent that their execution is an expense to the community or to the contestant. Ordinarily their influence on resource use may be neglected. During periods of rapid social change, however, the costs of litigation exert an appreciable influence on entrepreneurial decisions. In such times the objectives of a piece of legislation may be less important than the methods by which it is enforced. Cumbersome and costly procedure has in recent years been known to go far in offsetting the beneficial effects of certain social legislation.

The scope of substantive law, in a sense, is as broad as the courts and legislatures choose to make it. It may encompass any aspect of human conduct which is subject to regulation. Yet many statutes which go under the heading of "laws" are of no special concern to the lawyer. Professor Freund makes a useful division between civil and criminal justice and statutes dealing with social and economic relationships. The dichotomy is not between law by judicial decision and law by statute, since much civil and criminal law has been codified even in the United States and England. It is based, rather, on the content of the law. Both types of law are binding on the citizens; both may be litigated in court. But statutes other than those which deal with civil and criminal justice are built on a foundation of experience and information which is not legal.⁴

⁴ E. Freund, "Legislation," *Encyclopedia of the Social Sciences* (New York: 1935), IX, 352.

The Constitution of the United States, not to mention the individual state constitutions, increases materially the litigious aspect of all legislation. Contestants may plead a case not only on the grounds that their interpretation of the statute is more correct than the interpretation of their opponent; they may also claim that the statute in question is inconsistent with the constitution, and hence is invalid. In an effort to anticipate and forestall as many ambiguities as possible, lawyers have more and more been called upon to draft legislation as well as to interpret its meaning. This should not be permitted to conceal the fact, however, that the content of legislation in this country has been increasingly nonlegal in character. That is to say, it has come increasingly to deal with particular economic and social problems peculiar to a locality at a certain time rather than with universal human relationships which repeat themselves everywhere at all times.

Civil and criminal justice is as essential to smooth-running enterprise as oil is to an automobile. It is a basic institution which must be present if organized society is to continue. But, like the ocean, which makes possible maritime commerce without specifying the direction of the sea lanes, it permits wide leeway in the use of resources. Not so with specialized social and economic legislation, the aim of which is to plot the course of enterprise rather than to lubricate the mechanism. We cannot, therefore, speak in general terms of the effect of social and economic legislation on resource use. We are obliged in the remaining sections of this chapter to examine the effect of specific statutes.

REGULATION OF INDUSTRY AND TRADE

No attempt will be made in this section to present an exhaustive list of statutes governing industry and trade in the United States. It will be necessary, however, to indicate general types of industrial legislation and to mention specifically certain important statutes.

Legislation pertaining to industry and trade may be divided into the following four categories:

1. Regulation which is negative in character. That is to say, laws defining the areas of industrial activity and listing the "rules of the game" without instructing the entrepreneur how he must act within the bounds of the laws. This type of regulation is, in many respects, similar to the common law. Indeed, anti-trust legislation finds its origin in the common law.

2. Affirmative legislation granting special privileges or exemptions to particular sections of the community (e.g., patents, tariffs, corporation charters, or the like).

3. Legislation which establishes administrative bodies with authority to regulate certain aspects of production policies of privately owned enterprises (railroads and public utilities are so regulated in this country).

4. Finally, legislation may give to a government agency power to own and operate an enterprise without any private affiliation, as in the case of the post office.

The first two forms of regulation do not interfere with the entrepreneur, who, by definition, seeks at all times to use available resources so as to maximize net revenue within a given framework of institutions and expectations (see chaps. iii and iv). These nonauthoritative regulations merely constitute part of the institutional

framework. When the government interferes with policy determination, however, our earlier analysis need no longer hold, since private objectives may be subordinated to social objectives, if the two are not coincident. Further discussion of conflicting private and social interests will be found in chapter ix. Now we must proceed with a brief survey of industrial regulation in America. A combination of a historical and a functional approach was chosen in order to emphasize recent changes in the character of government regulation.

The Constitution of the United States, as it is interpreted by the courts, imposes an elastic, but nevertheless a decided, boundary to the field of federal regulation of industry and trade. Congress is empowered to regulate "commerce with foreign nations, and among the several states"; to levy taxes "for the common defense and general welfare"; "to coin money" and "regulate the value thereof"; "to establish postoffices and post-roads"; to create patent and copyright monopolies for a limited period of years; and to establish uniform bankruptcy laws.⁵ But any legislation regulating industry and trade must find its justification in one of these clauses, since the Tenth Amendment specifies that "the powers not delegated to the United States by the Constitution nor prohibited by it to the States, are reserved to the States respectively, or to the people."

Until more than a decade after the Civil War the only two types of industrial legislation passed by Congress were intended to stimulate business. Patents and copy-

⁵ Art. I, sec. 8, of the Constitution. The other stated powers of Congress do not pertain to business.

rights were granted, and tariffs were imposed on certain foreign commodities. The legislatures of the individual states were equally passive. Special legislation to restrain business (apart from the criminal laws and the police power of the various states) was virtually absent from the statutes.

REGULATION OF COMMON CARRIERS

Clamor for industrial regulation was first instigated by the farmers, who strenuously objected to discriminatory rates, rebates, and the "excessive" charges of many of the newly formed railroad pools and combines. The movement resulted in the passage of the so-called "granger laws" in several of the midwestern states. Rates were regulated by direct legislative decree or through official commissions set up for the purpose. The new laws were given judicial sanction in several court decisions. The principal Supreme Court decision favorable to the new laws (1876) was reversed, however, in 1885 because of the interstate character of the commerce.⁶ This led directly to the passage of the federal Interstate Commerce Act (1887), which, for the first time, subjected railroads to regulation by a federal commission.⁷

The powers of the Interstate Commerce Commission

⁶ *Munn v. Illinois*, 94 U.S. 712-13, and *Wabash, St. Louis and Pacific Railway Company v. Illinois*, 118 U.S. 557. The principles which were established in these decisions were to the effect that railroads should be treated as public service enterprises. As such they were subject to the right of states to exercise police power in order to protect the health, welfare, and safety of its citizens.

⁷ See J. M. Clark, *Social Control of Business* (2d ed.; New York, 1939), chap. xviii, and A. M. Schlesinger, *Political and Social Growth of the United States, 1852-1933* (rev. ed.; New York, 1935), pp. 161-63, 194-97.

were so limited during the first sixteen years of its existence that it was able to do little more than irritate the former recipients of discriminatory favors. Rate regulation did not become a prerogative of the Commission until 1906.⁸ The Transportation Act of 1920 extended the powers of the Interstate Commerce Commission to include regulation of new construction, the issue of securities, and consolidation. As objectives, the Commission was to seek to preserve competition, to maintain existing trade and commerce routes, and to equalize the earning power of the various railroad systems under a uniform level of rates in so far as equalization was compatible with the first two objectives. In line with these objectives a tentative plan of consolidation was drawn up.⁹

Railroad legislation since the depression has dealt principally with emergency conditions in a sick industry. Interstate Commerce Commission powers have been further extended in the process. Partial exemption from anti-trust laws has been granted in the interest of recovery. A Federal Co-ordinator of Transportation was appointed to study the present needs of the industry and to make specific recommendations on reorganization.¹⁰

⁸ The Elkins Anti-rebate Act (1903) dealt mostly with personal discrimination; the Hepburn Act of 1906 gave the Commission power to fix rates on complaint, and it put in their hands the control of railroad accounts. In 1910 the Mann-Elkins Act completed the Commission's effective control of rates and expanded its jurisdiction to include express and sleeping-car companies, telegraph and telephone companies, pipe lines, and other companies playing an essential part in transportation (see Clark, *op. cit.*, pp. 282-84).

⁹ D. P. Locklin, *Economics of Transportation* (Chicago, 1935), chap. xi.

¹⁰ Four measures have been enacted since 1930: the Delegation of Authority Act; the Relief of Debtors Act; the Emergency Railroad Transportation Act of 1937; and amendments to the Railway Labor Act (*ibid.*, chap. xii).

At the present time the Interstate Commerce Commission regulates the rates and financial organization of virtually all common carriers which operate across state boundaries. It combines the legislative, executive, and judicial functions in a manner quite antithetical, in many respects, to the principle of separation of powers upon which the American Constitution was based.¹¹

ANTI-TRUST LEGISLATION

The anti-trust movement¹² started later than agitation against railroad practices. It was based on the belief that the common welfare is best protected by the preservation of competition in most industries rather than by the regulation of monopolies. The Sherman Anti-trust Law (1890) was essentially an effort, through federal jurisdiction, to put "teeth" into the age-old common-law doctrine that contracts in restraint of trade are void and that conspiracies to monopolize are criminal offenses. Several of the states had previously passed similar laws.¹³ Section 1 of the act specifies that "every contract, combination in the form of trust or otherwise or conspiracy, in restraint of trade or commerce among the several states, or with foreign nations is hereby declared to be illegal." Violation is a misdemeanor punishable by fine or imprisonment. The second section imposes like penalties on persons "who

¹¹ See Clark, *op. cit.*, p. 263.

¹² For a useful discussion of anti-trust legislation see C. S. Tippetts and S. Livermore, *Business Organization and Control* (New York, 1932), chaps. xiv, xv, xx, xxi, and xxii, and Clark, *op. cit.*, chap. xxv.

¹³ L. S. Lyon, M. W. Watkins, and V. Abramson, *Government and Economic Life: Development and Current Issues of American Public Policy*, I (Washington: 1939), 250-56.

shall monopolize, or attempt to monopolize or combine or conspire with any other person or persons, to monopolize any part of the trade or commerce among the several states, or with foreign nations." Neither "conspiracies in the restraint of trade nor "monopolies" were defined in the act, with the result that there was, and is, much ambiguity as to its interpretation. The absence of a vigorous government investigating and prosecuting agency prevented active enforcement of the act until 1903, when a Federal Bureau of Corporations was organized for the purpose. During the next decade "trust-busting" became a political battle cry. A number of large corporations were dismembered.¹⁴

A new phase of anti-trust legislation was undertaken by President Wilson in 1914. The Clayton Act (1914) was intended to supplement the Sherman Act by prohibiting certain specific unfair competitive practices. Price discrimination "where the result of such discrimination may be to substantially lessen competition or to tend to create a monopoly in any line of commerce" was declared illegal in all but certain exceptional cases. Manufacturers were forbidden to make exclusive dealer agreements or tying contracts with retailers. The acquisition of the stock of a commercial corporation by a holding company, "where the effect of such acquisition [would] be to substantially lessen competition," was prohibited. And, finally, directors of corporations were forbidden to hold directorship in more than one competing company lest such interlocking of directorates be used to diminish competition between the companies.

¹⁴ *Ibid.*, chap. x.

The Federal Trade Commission was established in the same year to investigate and prosecute unfair competitive practices. It has become the most active government agency having to do with the maintenance of competition. On the whole, however, it has concerned itself more with the unfair practices of small companies than with those of giant corporations. In this respect it has opened up a field of regulation complementary to the Sherman and Clayton acts.¹⁵

During the twenties there were few federal anti-trust suits. But the restraining effect of the Clayton Act on the behavior of corporations should not be underestimated. The National Industrial Recovery Act experience gives some indication of the type of collusive action which is likely to appear when competitive practices are not enforced. The Temporary National Economics Committee is now in the process of ascertaining new and more effective methods for maintaining (or re-establishing) competition, in those industries where competition is held to be socially desirable but where conflicting legislation (such as "fair-trade" laws) make this increasingly difficult, as we shall presently see.

PUBLIC-UTILITY REGULATION

Certain industries recognized by the courts as being "affected with a public interest" have not, until recently, been subject to direct federal regulation because they do not ordinarily operate across state boundaries. Public utilities or "natural monopolies," as they are sometimes called, include power, gas, and traction com-

¹⁵ Tippets and Livermore, *op. cit.*, p. 600.

panies. They are granted charters, by state or local governments, giving them exclusive rights in particular localities. In return they are placed under contractual obligation to perform regular and adequate service to the community at rates which are subject to regulation by local authorities. The principle of "fair return on fair value" has been the traditional guide to rate regulation, but the determination of "fair value" has necessitated an endless amount of costly litigation with results which can hardly be called satisfactory.¹⁶

In recent years there has been some tendency toward municipal ownership of utilities. The movement in this country, however, is far less pronounced than in European countries.

A more significant trend is the establishment by the New Deal of publicly owned utilities operated by the federal government in competition with private companies. These federal projects, the most outstanding of which is the Tennessee Valley Authority, are designed to act as "yardsticks," or standards of comparison, for the guidance of the rate policies of private companies. It was hoped that they would be an improvement over

¹⁶ The confusion implicit in rate regulation based on the "fair return on fair value" principle is well summarized by Professor Clark in the following passage: "The problem of regulation is the problem of determining what the earnings (and the corresponding value) ought to be, as distinct from what they are. It assumes that both the earnings and the corresponding value may be unreasonably large, and that both may need to be brought down to a reasonable level. Hence the power to regulate (which is our major premise) is the power to alter the value of property, or it is nothing at all. This affords a basis for another definition of fair value, namely, what value ought to be under fair earnings. This is the only species of fair value that can logically be used to describe the standard to which rates ought to conform. It contains no solution; it merely states the problem" (*op. cit.*, p. 321).

the previous application of the "fair return on fair value" doctrine. In fact, lack of comparability between government and private projects¹⁷ has meant that "yardstick" regulation is fully as arbitrary a means of regulating rates as the older procedure. To use the expression coined by the New Deal, it is a "birch rod."

Since 1930 the federal government has enacted two other types of public-utility regulation. The Federal Power Commission, established in 1930, controls the issue of licenses to private and public corporations wishing to use navigable streams for power generation. It also regulates electric power transmission across state boundaries. The Public Utility Holding Company Act seeks to prevent extreme concentration of utility control through pyramided holding companies on the ground that they place undue power in private hands without adequate social justification or supervision. The administration of the act was placed in the hands of the Securities and Exchanges Commission. Thus far, the Commission has been reasonably lenient in enforcing the so-called "death-sentence" clause, which demands the dissolution of those public-utility holding companies removed from the operating company by more than one intermediate holding company.

Uncertainties arising out of recent federal legislation and proposed legislation thus far have discouraged new

¹⁷ E.g., T.V.A. undertakes conservation, improvement of waterways, and flood control, as well as power generation. It is impossible to say how much of the cost of each dam should be used as a base for electricity rates. Tax exemption and the relative ease with which the government can borrow money without reference to any return from its use are further points of difference between public and private corporations.

private investment in the utility field. Whether this is more than a temporary condition remains to be seen.

LEGISLATION FOSTERING MONOPOLY AND PRICE-FIXING

Although vigorous competition has always been looked upon as a desirable means of preventing private abuses and maximizing social gain in an enterprise economy, legislative interference with competition has been sanctioned under certain circumstances in this country.

1. Patents, copyrights, trade-marks, and the like create a partial monopoly for the person to whom they are granted. These special privileges are justified by the government on the grounds that they stimulate creative thought and invention which will promote the general welfare. The innovator is rewarded with monopoly rights over the fruits of his invention or creation for a period not to exceed seventeen years.

2. We have already discussed the activity of the government toward industries known as "natural monopolies." No attempt is made to enforce competition in these industries, but they are subjected to government supervision and regulation.

3. A great deal of government regulation of competition has been undertaken (especially recently) in the name of conservation. Some of the legislation has been bona fide, and some has used conservation as a cloak to conceal other objectives.

Birds, fish, and mammals are protected from indiscriminate exploitation through national and state wildlife preserves, the closed season, and game laws. Large-

scale soil-conservation programs involving the semi-enforced co-operation of landowners has recently been undertaken. Some reforestation and regulation of the lumber industry has been attempted, but this is not, as yet, extensive. State proration of the output of oil is intended to diminish wasteful drilling and conserve our oil supplies. By diminishing the crude supply immediately available it has tended to put a floor under oil prices.¹⁸ The Bituminous Coal Act of 1937 established a commission with authority to set minimum and maximum prices of coal in different regions. In this case it is fair to say that conservation of resources which had been little more than an excuse even in the Bituminous Coal Conservation Act of 1935 was of very minor importance in the 1937 act. Its real purpose was to cope with some of the transitional problems of a declining industry.¹⁹

4. In the retail food and drug trade competition has been regulated in most of the states by so-called "fair-trade" laws.²⁰ The "fair-trade" movement is a child of the great depression, the first state law having been passed by California in 1931. At the present time (1940) some forty-four states permit resale price contracts whereby manufacturers or wholesalers set a minimum price at which a branded product is to be retailed. Nearly as many states prohibit "loss leaders" and

¹⁸ E. G. Nourse and H. B. Drury, *Industrial Price Policies and Economic Progress* (Washington, 1938), pp. 189-202.

¹⁹ Lyon, Watkins, and Abramson, *op. cit.*, Vol. II, chap. xxiv.

²⁰ This movement is not to be confused with the standardization in the quality of branded and trade-marked merchandise brought about by the Food and Drugs Act of 1906 and by similar subsequent laws. See *ibid.*, I, 224-37.

other special kinds of discrimination.²¹ "Fair-trade" laws were given special exemption from anti-trust laws (permitting them to operate across state boundaries) by the Miller-Tydings Amendment (1937) and the Robinson-Patman Act (1937). Although only a small percentage of retail commodities are affected, the "fair-trade" laws symbolize a disquieting trend in the direction of legalized price-fixing.

5. The government has thought it desirable to interfere temporarily with competition in periods of national emergency. In the last war operation of some of the major industries was taken over by the government, and prices were artificially manipulated. More recently the New Deal has regulated industrial and agricultural prices and output as a means of combating the depression. General industrial price-fixing under the National Recovery Administration codes proved unsatisfactory and was continued by law in a few industries only after the act was invalidated. In agriculture, on the other hand, crop restriction and price-pegging through guaranteed government purchases have now assumed an air of semipermanence. The prospect of our embroilment in another world-war makes government price-fixing once more appear to be a likelihood.

6. Import tariffs were advocated for the United States by Alexander Hamilton²² and Frederick List as a protection to infant industries. List admitted that tariffs prevent the consuming public from taking ad-

²¹ See E. T. Grether, *Price Control under Fair Trade Legislation* (New York, 1939).

²² In his *Report on Manufactures* (1790).

vantage of the international division of labor. He felt that consumers should be compelled to make a temporary sacrifice in order that young industries be given a chance to develop. He recommended the removal of duties as soon as home industries were well established.²³ Our actual tariff history has seen a series of almost uninterrupted increases in the tariff since the first tariff act in 1789. The fact is easily understood when it is pointed out that those manufacturers who benefit temporarily (or permanently through monopoly power) by high prices and less foreign competition have always been more effectively vociferous than the consuming public or the exporters who would be better off with lower tariffs. Advocates of high tariff have been so successful in their campaigns that they have persuaded a large body of voters that high tariffs protect the "American" standard of living, increase employment, and work other desirable miracles.²⁴ No mention is made of the fact that tariffs foster monopolies by reducing the number of competitors and by narrowing the market areas. Thus tariff legislation conflicts inadvertently with the anti-trust policies of the United States.

²³ G. von Haberler, *The Theory of International Trade: With Its Applications to Commercial Policy*, trans. from German by A. Stonies and F. Benham (German ed., 1933; English ed., New York, 1936), pp. 278 ff.

²⁴ For an able refutation of these and other protectionist claims see *ibid.*, chaps. xv and xvi. The proponents of high tariff have found qualified support of tariffs during depression from distinguished economists. E.g., see J. M. Keynes, *The General Theory of Employment, Interest and Money* (New York, 1936), pp. 335 ff., and Joan Robinson, *Essays in the Theory of Employment* (London, 1937), Part III.

The foregoing discussion of price-fixing and monopolies nurtured by the government is intended to indicate some of the institutional aspects of the subject which will be examined from an economic point of view in chapter vii. It will be pointed out that monopoly and price-fixing tend to be wasteful whether they are the result of private collusion or of government intervention. On the other hand, as we shall see in chapter ix, the enforcement of pure competition may be more costly than it is worth. The costs must be weighed against the advantages before final judgment can be passed.

SOCIAL LEGISLATION

Statutes which deal specifically with human welfare are sometimes grouped together under the heading of "social legislation." They ordinarily affect resource use through their influence on relative costs. They tend to make labor expensive relative to capital resources, and hence to cause a more intensive use of capital resources as compared with labor.

The three broad fields covered by social legislation are: social insurance (including accident, health, old age, and unemployment); labor (conditions of work, wages, and hours); and emergency welfare (direct relief and public works). Federal legislation was so extremely limited in all three fields until the New Deal that historical references may be omitted.

SOCIAL INSURANCE

Accident insurance, although it has been compulsory in most of the states for some time, has never been incorporated into a federal statute. The burden which it

imposed on industry was never great. Better safety devices and increased care have made possible progressively lower rates. Most employers now look upon it as an asset which more than pays for itself by improving labor efficiency.²⁵

Nation-wide health insurance ("socialized medicine," as it is often called in this country) has never been introduced in the United States; so we need not concern ourselves with it here.²⁶

Old age insurance (benefits) and unemployment insurance (compensation) were introduced in the same federal statute. They use similar, though not identical, techniques for raising funds. In each instance both employer and employee contribute a fraction of weekly wages to a government agency.²⁷ It seems clear that the act has raised wage bills materially. In industries where the demand is inelastic, much of the increase is absorbed by the consumer in higher prices. Industries having elastic demand curves must suffer a severe drop in earnings, use relatively less labor in production, or raise prices and contract output. Quite possibly there may be a combination of all three. Since wages are a major cost item for most firms, a direct tax on the wage bill is almost certain to have an adverse effect on profit expecta-

²⁵ H. A. Millis and R. E. Montgomery, *The Economics of Labor*, Vol. II: *Labor's Risks and Social Insurance* (New York, 1938), chap. iv.

²⁶ *Ibid.*, chap. vii.

²⁷ The federal government also contributes to the old age insurance fund through a rather complicated system of payments to states having insurance plans. The unemployment insurance fund does not receive government support. See P. Douglas, *Social Security in the United States* (2d ed.; New York, 1939).

tions unless a well-developed boom is under way or unless the payment of simultaneous benefits stimulates consumption and expectation correspondingly.²⁸ Quite apart from the possible depressing effect on national income which unemployment and old age insurance taxes may have, they undoubtedly lead to the introduction of labor-saving devices and the employment of less skilled labor. Against these considerations, however, must be weighed the increased security and well-being of the persons who are benefited by the laws.

LABOR LEGISLATION

It is hard to say whether labor legislation should be considered in connection with social or industrial legislation. Clearly it is of the utmost importance in both connections.

The National Labor Relations Act (1935) and the Fair Labor Standards (Wages and Hours Act, 1937) are the two federal statutes of major consequence in the field. The Wagner Act (National Labor Relations Act) seeks to guarantee to the workingman the right to bargain collectively with his employer through representatives of his own choosing. The National Labor Relations Board was established to enforce this act and to hold elections upon the request of 10 per cent of the employees of any plant. The act has been severely criticized for its unfair partiality to labor. The Board has been attacked both for prejudices in favor of labor, as opposed to employers, and in favor of the Congress of

²⁸ The writer is inclined to discount this argument, since the impact on wages is so much more direct than the increase in consumption.

Industrial Organization, as opposed to the American Federation of Labor. Current congressional hearings seem to substantiate these claims; but, in any case, there can be no doubt that the act has greatly strengthened the organized labor movement in this country. The direct effect on resource use is more difficult to determine. Temporarily, at least, profit expectations have been impaired, with the consequent decline in investment. But a greater semblance of impartiality on the part of the Labor Board might be sufficient to allay most business fears. It would not so quickly reduce the danger of labor monopoly (see chap. vii).

The influence of the Wages and Hours Act is more easily discernible. By the raising of wages and the shortening of hours of work employers have been forced to use more mechanical substitutes for labor and to discharge employees. As yet, however, the full impact of the act has not been felt, nor have sufficient statistics been gathered to permit us to make a reliable quantitative statement.

EMERGENCY WELFARE LEGISLATION

From a human point of view the relief of physical suffering and need during periods of business depression is essential. Society now accepts without question the responsibility of caring for the destitute. But the method of relief is not so easily agreed upon. The New Deal has acted on the theory that public works and relief financed by government borrowing are desirable, not only from a human point of view but also as a means of stimulating economic recovery. The administration has not been afraid, therefore, to spend lavishly, since large-scale

spending is believed to further the common interest by increasing the propensity to consume and, through it, the volume of investment and the level of income. Others have attacked this kind of depression remedy as a scatter-brained device certain to lead to ultimate destruction. Obviously, economists in these two opposing camps would give different answers to the question: "How does emergency relief legislation affect the use of resources?" The writer is inclined to agree with the New Deal that deficit financing during depressions, other things equal, is helpful to recovery.²⁹

Emergency relief legislation does not exert a pronounced influence on relative cost. It does not particularly influence the ratio of labor to capital in production, except in public works, where relatively more labor is used than ordinarily.

TAXATION

All forms of taxation tend to deflect resources from the uses to which they would have been put in the absence of taxation. The incidence of some taxes, however, is concentrated on the distribution of income among individuals, whereas other taxes do more to change the technical methods of production and the allocation of income as between different commodities. In the following outline of the influence of the American tax system on resource use we shall stress the distinction between the income and the substitution effect of different taxes. We shall consider the influence of existing taxes rather than the effect of changes in the tax structure.

²⁹ Acceptance of the "pump-priming" principle should not be taken to imply general support or condemnation of New Deal monetary policies.

Nearly half of all federal revenues are derived from progressive taxes on personal and corporate incomes. Surtaxes are steeply progressive in the case of individual incomes (ranging from 0 to 75 per cent with a base income tax of 4 per cent in the 1936 tax act). They are consciously designed to lessen the inequality of income distribution, and in that respect they are successful. Unfortunately, heavy surtaxes have had additional and unintended repercussions, owing in part to the existence of substantial issues of tax-exempt government securities. Many individuals with large estates have found it to their advantage to invest in tax-exempt securities, despite excessively low interest rates, in order to avoid income and inheritance taxes which approach confiscation in the high brackets. Thus, some persons who formerly were leaders in promoting new enterprise are now primarily holders of government bonds. Business recovery has unquestionably been retarded as a result.³⁰

Income taxes have a supplementary substitution effect which is indicated by the income elasticity of the demand function. That is to say, relative expenditures on particular commodities ordinarily vary in private budgets as incomes vary in size.³¹ One might expect, for example, that progressive income taxes would have a depressing effect on the sale of expensive luxuries and a stimulating effect on the sale of items purchased by persons of moderate means.

³⁰ See B. M. Anderson, Jr., "Eating the Seed Corn," *Chase Economic Bulletin*, Vol. XVI, No. 2.

³¹ The functional relationship between income changes and saving is also of great importance when income-tax changes are under consideration.

Death duties and gift taxes are imposed by the federal government and by many of the states as additional measures whereby inequalities in income and wealth may be diminished. In most respects their effect is similar to that of income taxes on income distribution and resource use. As in the case of steeply progressive income taxes, they tend to compel wealthy individuals to invest in government securities and to maintain large cash balances rather than to hold industrial issues which could only be rapidly liquidated for tax purposes at a great sacrifice in value.³²

The capital-gains tax, as it now operates, is thoroughly inconsistent. Realized appreciation in capital value must be recorded as income for the period in which it is realized. Realized capital losses, however, may not be deducted from income in an amount exceeding two thousand dollars, nor at all unless, during the same or next succeeding income period, capital gains of a like amount were realized.³³ The effect of this regulation is to cause large property-holders or security-owners to devote their energies toward balancing capital gains and capital losses rather than toward making "sound" investments in promising enterprises.

Property taxes, from which local governments derive most of their revenue, are essentially taxes on rent

³² There are actually instances on record where the whole of a large estate was taken for taxes because in the process of liquidation the nonmarketable holdings were sold for less than the value of the tax lien on them.

³³ This description is oversimplified, since a 1938 amendment to the Tax Act of 1936 states that the percentage of realized capital gains or losses which must be recorded as "income" diminish with the number of years that the security has been held before being resold. But this has not made the regulation more logical even though it is now less harmful.

(considered as a distributive share of income). Assuming that tax rates are always based on true values and that they are nondiscriminatory, they fall exclusively on rentiers, since the owners of "real property" (land and buildings) will seek to maximize the return to that property, irrespective of the tax. The tax, therefore, cannot be passed on to anyone else. Property taxation influences income distribution materially, but it ordinarily does not affect the allocation of transferable resources at all.³⁴

Sales taxes are levied by certain of the states and a few cities in the United States. They are usually justified on grounds of expediency, since they are highly productive of revenue and relatively easy to collect. On the other hand, persons with large incomes spend a relatively large portion of their income on intangible items—such as servants, travel, and the like—which are not subject to sales taxes. Individuals with small incomes consequently are obliged to pay a larger proportion of their incomes for such taxes than wealthy individuals. The sales tax accentuates inequalities in income. It has a subsidiary substitution effect which fosters the consumption of intangibles and luxuries. The sale of nonluxuries is diminished relatively except in the case of "inferior" goods.³⁵

³⁴ When changing conditions bring about downward changes in the value of property (such as land or buildings) which are not reflected in the assessments on the property, the taxes may result in the abandonment of the property, because the taxes may exceed the revenue which can be derived from it. In that case the tax would have resulted in a reallocation of transferable resources as well as a readjustment in relative income distribution.

³⁵ An inferior good is one whose income elasticity is less than one; i.e., relatively more of it will be consumed at the same price as income diminishes. See J. R. Hicks, *Value and Capital* (Oxford, 1939), p. 35.

The above-mentioned taxes constitute the principle general-purpose taxes in this country. In addition to them a number of taxes are levied for special control or revenue purposes.

Highway construction and maintenance is supported by state-imposed vehicle registration taxes and gasoline taxes collected both by the federal and the individual state governments. The demand for automobile transportation seems to be relatively inelastic, so that the taxes are paid almost entirely by the consumer.

The federal government taxes tobacco, alcoholic beverages, and other luxuries partly for revenue purposes and partly to discourage the consumption of commodities which may become habit-forming and physically harmful. Theater tickets, club dues, and the like are taxed on the grounds that they are unnecessary luxuries the consumption of which the community can afford to discourage for revenue purposes.

Other commodities are taxed to protect special interests in the community. Thus a heavy tax was placed on oleomargine, which is colored to look like butter, in order to protect the dairy industry. Foreign commodities are taxed to protect domestic producers (see p. 131). Interstate taxes on commodities transported from one state to another have also sprung up since 1933, when section ii of the Twenty-first Amendment to the Constitution provided that the several states might regulate the transportation of intoxicating liquor across state boundaries. These taxes, which are tantamount to international trade-barriers, exercise a similar influence

on resource use.³⁶ These taxes have a direct substitution effect which, indeed, is the reason they are levied.

Taxes on pay rolls are levied to provide old age benefits and unemployment compensation. The substitution effect of these taxes was discussed in the last section.

Still other taxes could be listed, but enough of the important ones have been mentioned to indicate the vital part which they play as instruments of social policy and as palings to steer resources in desired directions.

CONCLUSIONS

Before leaving the subject of legislation a few general remarks should be made. It should be recognized, in the first place, that the ultimate social objectives of any particular statute are ordinarily of secondary importance to the entrepreneur, who is primarily interested in the specific influence of the statute on his own business prospects. As long as the enterprise system continues, the reactions of entrepreneurs to regulative legislation will have to be taken into account if the objectives of regulation are to find their mark. This does not mean that legislation must fawningly yield to the whims of business. It does mean that abstract principles of public regulation cannot be translated into fact without adjustment to concrete situations. Seemingly inconsequential details in the wording or the administration of a statute may exert an unforeseen influence on the use of resources more potent than the central body of the act.

At various points in our discussion we have distinguished between actual and intended effect. It is well

³⁶ See "Trade Barriers among the States" (various authors), *State Government*, March, 1939.

that the reader be reminded once more of the danger of face-value judgment. For example, legislation which is ambiguous may result in ruinous litigation, even though the principles motivating the statute are accepted by all concerned. Statutes calling for authoritative supervision and administration by a commission cannot be interpreted independently of some knowledge of the personnel of the commission. Changes in personnel may be equivalent to changes in the statute. Or, again, when effective regulation requires extensive investigation, the cost of providing relevant material may outweigh in importance to the firm of the regulations themselves. Governmental waste may arise either from an inappropriate, an ill conceived, or a badly administered statute (see chap. ix).

The foregoing two chapters on economic and political institutions should have demonstrated that institutions not only give conformation to the economic process but also provide it with a milieu and give it sustenance. But to have admitted so much does not commit one, as the institutional economist would have us believe, to an interpretation of history which is no more than a study of institutional evolution. There is still a place within the institutional framework for a pricing system which takes the shock of adjustments to change—a system which can make it possible for a democratic society to allocate resources among alternative uses in a manner which approximates a social ideal.

The decisions of the competitive entrepreneur are institutionally controlled in much the same sense that

the motions of a trout are controlled by the current and bed of a stream. Certain institutions, such as markets, money, and law, are essential to competitive price economy just as water is essential to the trout. Just as the trout is less restricted in the high waters of a flood than in times of drought, when he must wriggle his way from pool to pool, so there are some institutional constellations which are favorable to competitive price adjustments and others which are not. In chapters iii and iv we spoke of the behavior of entrepreneurs in an institutional framework conducive to perfect competition; but when, in chapters v and vi, we analyzed the institutions which actually exist in the United States, we found that some of them, in fact, interfere with competitive price adjustments. Now, we must study the influence of monopoly and price-fixing on the production plans of the entrepreneur.

CHAPTER VII

RESOURCE USE UNDER MONOPOLY AND PRICE-FIXING

TYPES OF MONOPOLY AND PRICE-FIXING

THE term "pure competition" is used to describe a situation where a large number of sellers independently offer a homogeneous commodity¹ for sale in a single market. The output of each seller is small, relative to total output, so that individual sellers may disregard the influence on price of changes in their own output. Putting it another way, the demand curve of individual sellers is infinitely elastic over the significant range of outputs.² It is also assumed that the individual producer is able to procure whatever quantities of productive resources he requires without influencing resource prices and that he is able to enter or leave the competitive field easily and without obstruction. This does not mean that entrepreneurs will expect commodity and resource prices to remain constant through time. Any number of considerations may lead them to expect wide price fluctuations, in the course of which production plans will be modified so that the present discounted value of anticipated net receipts will at all times be a maximum (see

¹ I.e., a commodity every unit of which is a perfect substitute for every other unit.

² See, e.g., E. Chamberlin, *The Theory of Monopolistic Competition* (Cambridge, 1933), chap. i, and F. Machlup, "Monopoly and Competition: A Classification," *American Economic Review*, XXVII, No. 3, 445 ff.

chap. iii). Competitive entrepreneurs merely recognize their own inability to influence the going price. They refrain from advertising, since they can sell their entire output at the market price without incurring any selling costs.³

It is common knowledge that pure competition actually exists in very few, if any, modern markets. The divergence between actual conditions and the purely competitive "ideal" has a threefold explanation. (1) Monopoly and monopsony⁴ elements appear when the firms are large, relative to the market to which they sell or from which they buy. This is essentially the problem of duopoly or oligopoly (or duopsony or oligopsony), discussed by Cournot, Edgeworth, and many modern writers. (2) Individual producers fail to have horizontal demand curves, even when a large number of them are competing in a single commodity or resource market, if the commodities which they produce or the resources which they buy are differentiated in some way so that buyers develop preferences for the "product" of one producer over that of another. The importance of product differentiation has been emphasized especially by Professor Chamberlin.⁵ It is usually known as "monopolistic competition." (3) Finally, purely competitive conditions do not obtain when prices are institutionally

³ Pure competition does not preclude the possibility of group sales promotion so long as it does not involve collusion.

⁴ For a further discussion of monopsony see pp. 162 ff. See also Joan Robinson, *The Economics of Imperfect Competition* (London, 1934), chaps. xviii and xix. A "monopsony" refers to a buyers' monopoly, as opposed to a producers' monopoly.

⁵ *Op. cit.*

controlled. Industrially and politically controlled prices, as well as prices which have become customary, have received extensive attention in modern economic literature. Several instances were mentioned in chapters v and vi of this essay.

The three above-mentioned imperfectly competitive forces may exist separately or in combinations. It might be supposed that a fourth category, "simple" or "pure" monopoly, should be included. But, strictly speaking, there is no antithesis to pure or perfect competition.⁶ No demand curve can have infinite elasticity for an appreciable distance, and no commodity is without substitutes, since all commodities compete with each other for the incomes of consumers. Thus, a monopolist may best be defined as the sole producer of a commodity for which there is no *close* substitute available to consumers in the market area. The only difference between a monopolist, so defined, and a monopolistic competitor is in the degree of substitutability of their products. That is to say, the demand curve of the monopolist would be more steeply sloping, so that he could exercise more effective control over the supply than could the monopolistic competitor. All the elements of simple monopoly are included in one or the other of the above-mentioned categories.

⁶ "Perfect" competition, as distinct from "pure" competition, is frictionless and may involve a higher degree of foresight (*ibid.*, p. 6). Mr. A. P. Lerner has used the term "pure" monopoly in another sense. He calls monopoly "pure" when it contains no element of "monopsony" ("The concept of Monopoly and the Measurement of Monopoly Power," *Review of Economic Studies*, I, No. 3, 161 n.). The term is not used in Mr. Lerner's sense in this essay.

How do monopoly and price-fixing influence the production plans in an enterprise economy, and what effect do they have on resource use? These are questions which we must now attempt to answer.

DUOPOLY AND OLIGOPOLY

A great deal has been written in a controversial vein on the determinateness of duopoly and oligopoly equilibrium.⁷ It is now recognized, however, that there is no unique solution to the problem. The answer depends on the assumptions made.⁸ (1) If each oligopolist (we will speak of the more general case, since it applies equally well to duopoly) recognizes not only that the demand curve for his product is negatively sloping but also that the other producers in the field will imitate the changes he makes in price or output, then price and output will settle at the point where they would be if the product were all produced by a single monopolist. In other words, the demand curve for each oligopolist is a fractional part of the total demand curve for the product, and it will have the same elasticity.⁹ (This situation is represented in Fig. 4 by a firm producing an output OM at a cost per unit OP . Demand and marginal revenue for such a firm are indicated by the steeply sloping dashed lines in Fig. 4.) Under these assumptions, if each oligopolist equates marginal cost with marginal

⁷ The problem of duopsony and oligopsony are analogous in every respect.

⁸ Much of the following discussion is adapted from Professor Chamberlin's analysis in chap. iii of *The Theory of Monopolistic Competition*. We will not attempt to set forth the proofs which Professor Chamberlin has given at some length.

⁹ Assuming that each producer retains the same position in the market relative to other producers.

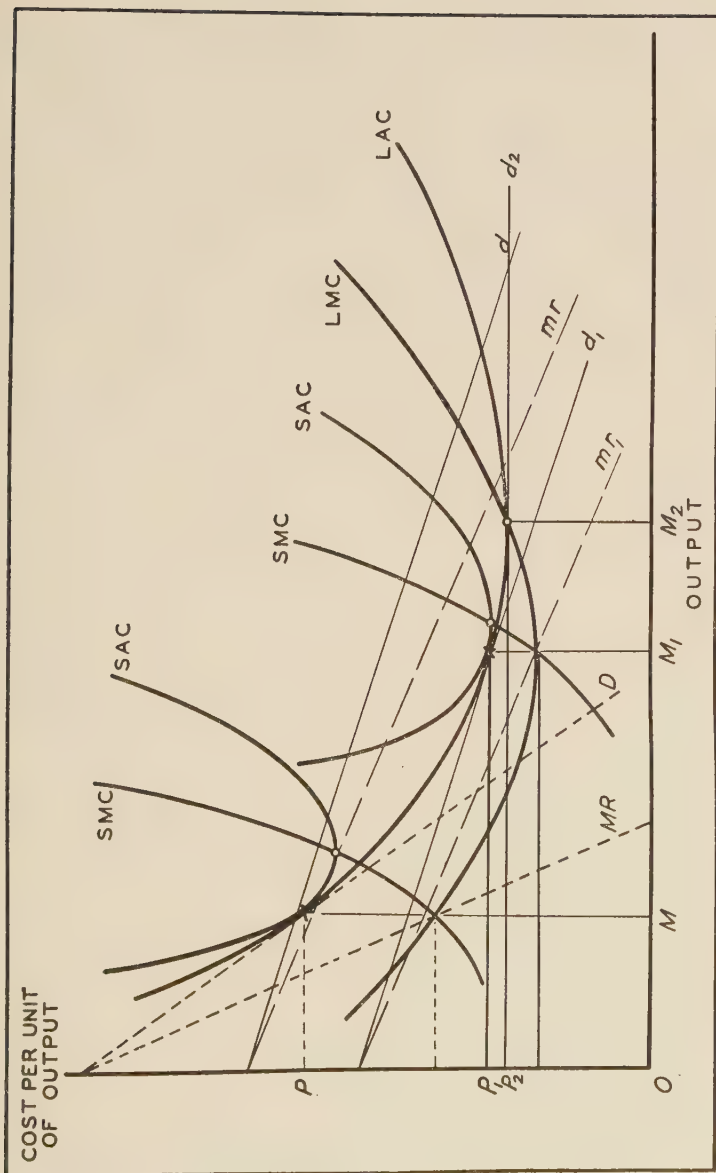


FIG. 4.—Output of the firm with a large number of competing firms and product differentiation

revenue, the price and combined output will be the same as the price and output of a single producer having no close competitors, even though there is no collusion between the producers. (2) If each oligopolist disregards the influence of his own behavior on the supply of his competitors but recognizes that their prices will move with, and be equal to, changes in his own price, the equilibrium will be determinate at a point below the simple monopoly price. (The output of such a producer would be OM_1 in Fig. 4, and his cost per unit of output would be OP_1 .) The more oligopolists there are the nearer the price will be to the competitive price. Output will be larger than it would be under simple monopoly. (3) When each oligopolist disregards his own influence on the price of his competitors and the latter assume they can get the market away by undercutting, the price will fall to the competitive level, even when there are only two producers, provided the producers persist in their original expectations and try to maximize their returns. (That is to say, in the long run each producer would produce the output OM_2 at a cost per unit OP_2 in Fig. 4. This is unrealistic, however, since if each oligopolist were to disregard his own influence on price and were to expand output accordingly, there would be a rude awakening to the facts when price began to fall. Thus long-run equilibrium would never be reached with such assumptions when the number of producers is small.)

These are but three of the many possible combinations and possible assumptions which can be made about entrepreneurial expectations. But they indicate how much more complicated analysis becomes as soon as it

is recognized that the entrepreneur may be forced to take into account the influence of his own actions on price as well as the influence of all the other forces which cause prices to fluctuate.

As a matter of common-sense observation there is reason to believe that prices are generally higher and output smaller when there are few producers than when there are many. The fewer competitors there are in a field, the more likely is each one to be aware of precisely how the others react to his own business strategy. An oligopolist may refrain from reducing prices, therefore, even though he knows that it would be to his advantage to reduce them if the other producers did not follow suit. As we have just seen, however, there is no logical reason why this result should necessarily follow. Moreover, advertising, product differentiation, price-fixing, and the like may confuse the price tendencies which would be evident in an oligopoly situation unmixed with other monopoly elements.

Oligopolies are typically found when, for physical reasons, the market is small or when costs may be reduced by large-scale production.¹⁰ In the case of power and traction companies, both conditions are fulfilled. For that reason they are often called "natural monopolies." Steel companies produce on a large scale but are able to sell to a wide market. Their monopoly power would not be so great were it not that they are protected from competition by institutional factors as well. The market, say, for cut flowers may be localized; but flower shops

¹⁰ These are, in fact, two aspects of the same problem, though it is convenient to think of them separately.

require little overhead, so that competition often prevails. Greater than normal profits need not accompany oligopoly unless competitors are forcibly prevented from entering the field.

It has often been asserted in recent years that oligopoly is becoming increasingly prevalent in this country.¹¹ As evidence of this tendency, economists have pointed to the rapid expansion of large corporations. Rather little has been said about changes in market areas, although the two, obviously, cannot be disassociated. Large corporations were, in fact, made possible by the swiftly widening markets which have accompanied technological advances in transportation and communication, together with the development of new markets in unindustrialized parts of the world. It is by no means self-evident that corporations have grown relatively faster than markets. The early traveling shoemakers in colonial days certainly had less competition than modern shoe-manufacturers. Small-town apothecaries or grocers could scarcely have met with the competition to which modern drug and food chains are subjected, even though interstate chains are a great deal larger. Unless it can be shown that markets have grown less rapidly than corporations, there is no reason to believe that oligopoly power has increased.¹²

¹¹ E.g., A. A. Berle, Jr., and G. C. Means, *The Modern Corporation and Private Property* (New York, 1936), and A. R. Burns, *The Decline of Competition* (New York, 1936).

¹² There are, of course, other arguments which may be advanced against corporations merely because they are big. It might be held, for example, that no private institution should be permitted to grow beyond a certain point simply because it might become an important power in the community which might be abused unless subject to social control. But these questions are not pertinent to our present discussion.

MONOPOLISTIC COMPETITION

American retail markets characteristically sell an enormous variety of slightly differentiated commodities. Many are alike except for their trade-names or their wrappings. Some bulky commodities differ only in their spatial location. Other commodities have very different physical appearances but perform services which are very nearly identical. Still others are distinguished in the minds of consumers because they are produced by widely known and reputable firms. If a group of differentiated "products," each one of which is a close substitute for the others, is sold by a large number of firms in a single market, the market is said to be "monopolistically competitive." Each entrepreneur, unlike the purely competitive entrepreneur, knows that he would not lose all of his sales if he raised the price of his product by a slight amount, and he knows that he could increase his sales by lowering the price. His own output, however, constitutes an insignificant portion of the total supply of the whole class of "products," so that he may neglect the *indirect* influence which his own actions have on his own price or on the prices charged by his competitors. In other words, the demand curve for the individual firm has a slight negative inclination, as in the case of the demand curves d and d_1 in Figure 4.

Professor Chamberlin has shown¹³ that, *ceteris paribus*, there is a tendency for price to fall until it equates average cost (including rent), since high profits lead producers to expand output and induce new producers to enter into the field. Individual demand curves are pushed downward to the left. Thus, in Figure 4 as long

¹³ *Op. cit.*, chap. v.

as price, and hence the demand curve d , is higher than LAC (long-run average cost), there will be a profit over and above normal return on the investment, and there will be a tendency for new firms to enter the field of competition. Expansion of output in the industry means that the demand curves of individual producers will fall. This process will tend to continue until d falls to d_1 , where it is tangent to the long-run average cost curve. At that point all profit except normal return on the investment is eliminated.¹⁴

We have indicated that the demand curve which the monopolistic competitor pictures for himself is generally based on the assumption that changes which he makes in his own price or output will not influence the price policy of his competitors. It is reasonable to suppose that this would not be true of an oligopolist unless the number of producers was quite large. The oligopolist is more likely to think of his demand curve as being a fractional part of the total demand curve. That is to say he imagines that his competitors' prices will fluctuate simultaneously with his own, which means that his demand curve is less elastic than it would be if he assumed his competitors' prices to remain constant. We may conclude, therefore, that the equilibrium price will ordinarily be higher, and output smaller, for the oligopolist than for the monopolistic competitor, assuming that entry to the field is not artificially restricted in either case and that prices are not institutionally controlled. This is illustrated in Fig. 4 by a comparison be-

¹⁴ Owing to discontinuities in fixed equipment, it is unlikely that the two curves would ever actually be tangential, but they would probably not overlap by much.

tween D (a dashed line), which is the demand curve for an oligopolist, and d_1 which is the demand curve for a monopolistic competitor. In this instance, under the same conditions, the oligopolist will produce an output OM at a price OP , whereas the monopolistic competitor will produce an output OM_1 at a price OP_1 . The only difference between them is in their expectations with respect to the influence of their own actions on the actions of their competitors. Individual plants under monopolistic competition will be smaller and more numerous than they would be under pure competition.¹⁵ They will, of course, be much smaller and much more numerous than under oligopoly. Professor Chamberlin calls the equilibrium toward which prices and output tend in monopolistic competition a "sort of ideal," since consumers purchase a greater diversity of products at the cost of a less "efficient" scale of production and higher prices.¹⁶

INSTITUTIONALLY CONTROLLED PRICES

Price adjustment, as it is understood in theoretical economics, is subject to institutional interference in a

¹⁵ See Chamberlin, *op. cit.*, pp. 81-100.

¹⁶ *Ibid.*, p. 94. Dr. J. M. Cassels has objected to calling the monopolistic competitive equilibrium a "sort of ideal" because it does not permit the equation of marginal social cost with price ("Excess Capacity and Monopolistic Competition," *Quarterly Journal of Economics*, LI, No. 3, 437). Whether or not production with a firm and at an output which is not at the minimum point of the long-run average cost curve should be considered wasteful depends on one's definition of waste." We shall have more to say on this question in chap. ix. (In Fig. 4 Professor Chamberlin's "sort of ideal" is the output OM_1 , where the demand curve d_1 is tangent to LAC —the long-run average cost curve. This is in contrast with the oligopoly equilibrium position, which is at the output OM , where the demand curve D is tangent to LAC . The long-run purely competitive equilibrium output would be OM_2 , which is at the minimum point of the long-run average cost curve.)

great variety of ways, many of which have already been touched upon in this essay.¹⁷ Prices which change slowly because they have become customary may merely cause "normal" price adjustments to take place with a time lag. But prices which are consciously manipulated by economic or political organizations are more likely to have a more permanent and pronounced influence on resource use.

Industrial price-fixing is most common during periods of declining prices and demand, in industries with large fixed investment. Price leadership, gentlemen's agreement, collusion through trade associations, and outright cartel agreements are all designed to prevent prices from falling through competitive bidding. This tendency for "cutthroat competition" to lower prices below average variable cost when demand is declining is due to the fact that the losses of each producer may be diminished by a cut in prices, *providing the others do not follow suit*. If several producers are involved, each producer may cut prices on the chance that the others will at least not follow suit immediately.¹⁸

In America most industrial price-fixing agreements are illegal (certain exceptions were discussed in chaps. v and vi), so that roundabout methods, such as price leadership and basing-point systems,¹⁹ are resorted to. The direct effect of price-fixing which does not ration

¹⁷ See chaps. v and vi.

¹⁸ On "cutthroat competition" see J. M. Clark, *The Economics of Overhead Costs* (Chicago, 1923), chap. xxii.

¹⁹ See Burns, *op. cit.*, for an exhaustive treatment of the various methods used by industry to get around anti-trust law restrictions.

output or sales is to increase nonprice competition. The quality and appearance of commodities are varied. "Free" samples or other inducements are offered with every sale. Vigorous advertising designed to impress the consumer with the superiority of the "product" of one producer as against competing "products" is undertaken. In other words, both production and selling costs are varied in order to maximize expected net returns, but outright price adjustments are avoided. There is a superficial resemblance between the problem of a competitive entrepreneur and that of an entrepreneur producing for a fixed price, since both act on the realization that market price is determined independently of their own behavior. But the similarity is spurious, for the competitive entrepreneur can dispose of his entire output at the going price without thought of sales promotion, whereas, in the case of the entrepreneur whose price is fixed by agreement, sales are a function of marginal production costs and of marginal selling costs.²⁰

Under some circumstances nonprice or product competition may become as intense as price competition. From the consumer's point of view, however, it is less salutary as the concessions in quality, or the "extras" which he receives, are forced on him in a bundle and at a fixed price. He may only receive more salesmanship

²⁰ Marginal production costs are naturally a determining factor in competitive output as well. But in the case of artificially fixed prices it is not only a question of moving along a single cost curve. A choice must be made between a series of possible "products," each having a separate cost function. The decision will be made on the basis of which cost function would be most profitable in the light of the given price and alternative outlays of sales promotion (see Chamberlin, *op. cit.*, pp. 78-81).

with no extras or concessions. When prices vary in a competitive market, the consumer may decide for himself how he wishes to dispose of the income he has saved through lower prices. Furthermore, it is debatable how far competitive sales promotion can be justified socially. To the extent that it furnishes accurate information, diminishes oligopoly by expanding markets, and supports publications which otherwise would have difficulty in finding support, it may be desirable. To the extent that it raises costs and prices without contributing to consumer satisfaction it may be harmful; i.e., it may work against an "ideal" allocation of resources.

Price agreements in a bearish market give to producers a degree of monopoly power which they would not otherwise possess. Thus they tend temporarily to prevent the bankruptcy of marginal producers. The fixed resources invested in the marginal firms are benefited, but the net social effect may be unfavorable because of losses suffered by consumers, by the owners of transferable resources, and most especially by employees, who are at least temporarily unable to find new employment.

Prices fixed by agreement and prices which are sticky downward, owing to nonaggressive price policies, often lead to temporary monopoly gains. Unless entrance to the particular competitive field in question is artificially restricted, however, new producers, in expectation of a large return, will pour in until profits become "normal." If price and demand do not change, the same volume of sales as before will be divided among a larger number of

producers, so that each producer will operate at a higher cost and will produce a smaller output than he would in a market with aggressive price competition.²¹

Cartels frequently go one step farther than simple price agreements. Some cartels divide sales among their members according to geographical regions. Others divide the output which can be sold at the stipulated price among the members so as to equalize marginal costs. Still others divide sales in proportion to the volume of sales which each producer had prior to the formation of the cartel.²²

Cartels which ration output or sales but which are unable to prevent new firms from joining the cartel must reapportion output (or sales) and readjust price to the most profitable level for the whole group every time a new firm is admitted. If firms in the cartel are known to be making profits higher than those in other fields, new firms will be tempted to enter until profits are comparable to those in other industries. The result will be a larger number of firms producing a smaller output per firm at a higher price than would be the case under competitive conditions. The price will be lower than it would be if there were only one producer in the industry,

²¹ Professor Chamberlin has cited this case as an instance of equilibrium with "excess" capacity (*ibid.*, pp. 104-9). Either monopolistic competition or oligopoly is a necessary but not a sufficient condition. The essential fact is price rigidity. To use Professor Chamberlin's own words: "Whenever price competition fails to function, whether because each seller is in close competition with a few others or for any other reason, the result is not merely higher prices but also excess capacity as a permanent and normal characteristic of equilibrium adjustment" (*ibid.*, p. 171).

²² See K. Pribram, *Cartel Problems* (Washington, 1935), chap. ii.

and the quantity sold would be greater.²³ More often cartels are able, by one means or another, to exclude firms they do not want. In that case monopoly revenue persists and the consumer suffers through higher prices.

Firms in cartels, even more than firms subject to other types of rigid price, are likely to be forced to operate at a point far short of "capacity," defined in terms of minimum average cost. They are obliged to maintain a larger plant lest their quotas be reduced. This is one of the most undesirable features of cartel organization, and it is a clear-cut case of social waste.

Before leaving our classification of types of monopoly we must generalize the discussion to include resource monopolies and monopsonies.

Labor unions offer the most conspicuous example of resource monopolies (or frequently bilateral monopolies). By regulating the supply of labor in a limited field they are able to raise wages and to maximize the total return to labor (i.e., labor's share of the national income or, more often, the share of the organized group at the expense of unorganized labor). Similarly, when some specific mineral or other deposit (e.g., aluminum and diamonds) is controlled by a small group of proprietors, supply and price can be adjusted so as to maximize the net revenue. To a lesser extent there may be monopolistic competition in the markets for resources.

²³ The writer is indebted to Professor Henry Simons, who worked out the details of this illustration in a book of "Materials and Problems for Class Discussion," used in the divisional course in economics at the University of Chicago.

The growers of agricultural products may attempt to establish a consumer prejudice in favor of some special variety of product. The owners of business machines may advertise a distinctive feature of their product as a justification for differential treatment. Institutional price-fixing is also well known in resource markets. Minimum wage rates have been set in most industrial countries, including our own. Unions do their best to establish standard wages for particular jobs. In addition to regulating wages, the New Deal is in the process of putting, or else has already placed, a floor under the prices of several agricultural commodities and coal.²⁴

Monopsonies are found where a small number of producers are the sole competitors for a resource. They are confronted with inelastic supply curves. Lack of aggressive competition among the buyers permits them to minimize their outlays for the resource (assuming that the resource is owned by a large number of persons) by adjusting the price which they will pay and the volume they are willing to take.²⁵

Further elaboration of these special cases of monopoly is unnecessary, since they do not involve any new principles. It is important merely that recognition be given to the fact that imperfections may occur in resource and partial-product markets as well as commodity markets; that buyers, as well as sellers, may interfere with the achievement of the competitive "ideal."

²⁴ See L. S. Lyon, M. W. Watkins, and M. W. Abramson, *Government and Economic Life*, Vol. II (Washington, 1940), chaps. xxiii and xxiv.

²⁵ See Robinson, *op. cit.*, chap. xviii.

MONOPOLY AND PRICE-FIXING WITH
CHANGING CONDITIONS

Any of the three monopoly elements which we have described could theoretically exist in a stationary equilibrium. Their presence would be revealed by a divergence between price and marginal production costs. This would indicate an "unideal" use of resources from a social point of view, but an employment of resources which would maximize the net return to individual entrepreneurs.

The salient facts about monopoly cannot be dealt with, however, solely in stationary terms (indeed, we have already been obliged to touch upon some of the dynamic aspects of monopoly in the previous section). Monopoly assumes a major role in connection with cyclical and secular change.

During prosperous times in a society where prices are substantially free from political regulation and where the more conspicuous forms of collusion are effectively prohibited by law, there is reason to believe that monopoly is relatively "harmless." In the first place, industrial price-fixing agreements rarely are effective when prices are rising, so that they may be discounted. Second, when profits and expected profits are high, the pressure of potential competition (from new firms entering the industry) becomes great even in industries with relatively few firms. Thus, oligopolists are likely to keep prices lower than the monopoly price as a means of discouraging new competition. If they fail to do so, they will soon be forced to reduce prices by new competitors. Finally, industrial expansion usually takes

place during periods of prosperity, so that, in addition to normal competitive activity, there is a struggle for new markets. Competition among oligopolists and monopolistic competitors is partly a question of increased selling costs, but a considerable portion of it takes the form of widening markets, increasing the number of competitors, lowering prices and improving the quality of goods sold. In other words, prosperity tends to diminish price rigidities and to narrow the gap between marginal cost and price. It is accompanied by an increase in the volume of employed labor and by a more intensive use of fixed capital resources.

The downward phase of the cycle, which is characterized by falling prices and demand, is far more subject to restrictive monopolistic practices. In the early part of the depression most entrepreneurs are reluctant to lower prices. They hope that the decline will be short lived, and they wait to see if demand recovers. Fear of "spoiling the market" and of provoking retaliation by competitors also dissuade them from hasty price cuts. In the meantime, some prices do fall. Accumulating inventories and unemployment exert increasing pressure on rigid prices which have fallen out of line with the general trend. But entrepreneurs in industries with large fixed investments merely become more determined to maintain prices, for they believe (probably with reason) that the demand for their products becomes less elastic as it falls. Price-fixing agreements, legal and otherwise, become the order of the day. Firms operate at a fraction of "normal capacity" but with high prices. No new firms enter industry because most

firms are operating at a loss (i.e., they fail to cover average total costs). Some firms are forced out of business. The monopoly position of the surviving firms is strengthened.

If the depression becomes sufficiently intense, so that many firms are unable to meet their contractual obligations, it may be that price agreements will no longer be able to withstand the pressure of socially meritorious "chisellers" who hope to gain at least a temporary advantage by price cuts.²⁶ The whole structure of rigid prices may give way to vigorous "cutthroat" competition. Prices may actually fall below marginal costs, if entrepreneurs think they see better times ahead, since the costs of reopening an inactive plant are often so great that it is worth operating with an out-of-pocket deficit for a short time rather than to close down altogether.

The effect of cyclically rigid prices on resource use is a question which is heatedly debated by students of trade depressions. Economists following in the neoclassical tradition maintain that rigid prices prolong and intensify depressions. Rigid wages, they say, are particularly to blame for sluggish recovery. Their argument runs chiefly in terms of the effect of irregularly high prices on costs and, hence, on profits; but mention is also made of their effect on demand (purchasing power). Drastic cuts in those wages and other costs which are out of line will, they say, lead entrepreneurs to expect wider profit

²⁶ This and several other of the above-mentioned points are suggested by M. Abramovitz in "Monopolistic Selling in a Changing Economy," *Quarterly Journal of Economics*, Vol. LII, No. 2.

margins. This will result in investment and ultimately recovery.

Economists of the Keynesian school²⁷ emphasize the income effect (propensity to consume) of falling wages and prices. They point out that a fall in wage rates, unaccompanied by an increase in employment or an increase in other expenditures, will result in a fall in the total income of a community. This will reduce effective demand, which will further intensify the depression. The Keynesians say that lower wages and other costs either will not change or else will diminish profit expectations (marginal efficiency of capital), because, they say, entrepreneurs are just as likely to expect prices to go on falling. Even if they were to expect prices to remain stationary at the new level, actual profits would soon be cut, so that their expectations would be in error. If entrepreneurs do expect prices to continue to fall, investment will not take place. Therefore, say the Keynesians, prices and wages should not be allowed to fall during depressions. Falling prices may be prevented by strong labor unions, by public works through governmental borrowing, by low interest rates, and by government-directed investment and other inflationary policies.²⁸

The usefulness of either theory naturally depends on the validity of its assumption.²⁹ Downward price

²⁷ I.e., those who agree with the ideas of Mr. J. M. Keynes in his *General Theory of Employment, Interest and Money* (New York, 1936).

²⁸ See *ibid.*, chaps. xix and xxii.

²⁹ Professor O. Lange has set forth the assumptions of both schools with admirable clarity in "The Interest Rate and the Optimum Propensity To Consume," *Economica*, Vol. V, No. 17.

flexibility is more likely to be stimulating to recovery than rigid prices, in the opinion of the writer, if it is accompanied by government spending which places a floor under the downward deflationary spiral. It is also more likely to be effective if other governmental policies do not negate the favorable effect that lower costs and government spending have on entrepreneurial expectations. Mr. Keynes and Professor Hicks³⁰ notwithstanding, it is the impression of the writer that institutionally fixed prices which prevent relative price adjustments have an unfavorable effect on profit expectation during business depressions. But adequate proof of this conviction would require a treatise on business cycles which would hardly be appropriate or feasible in the present essay.

Secular trends in industry may also affect the degree of monopoly and, hence, resource use. Competition is generally keener in young industries, where the reputations of individual firms have not been established and where prices and market practices have had little chance to become traditionalized. Large profits and brightly painted potentialities make the number of firms in a new industry highly unstable, while spectacular successes and hopeless failures prevent the formation or maintenance of price agreements.

As industries mature, the individual firms in them tend to become unwieldy from expansion based on the desire for prestige or in order to take advantage of national advertising mediums. Often the founders of firms

³⁰ *Value and Capital* (Oxford, 1939), chap. xxiv.

are replaced by managers more interested in their jobs than in spectacular success or in active promotion of the best interests of the enterprise. Security and stability are sought after, rather than large returns. Institutional bureaucracy calcifies their structure and impedes adaptation to changing conditions. Stagnant firms such as these offer fertile soil for the growth of monopoly. If their financial power and prestige are sufficiently successful to exclude new competition, their protected oligopoly position is likely to encourage lax management. Price leadership and price-fixing are welcomed as methods of assuring a comfortable return without fear of aggressive competition. Product differentiation is also easier for long-established firms because their name alone gives their product distinction.

Thus, one may look for a greater degree of monopoly in mature industries than in young industries.³¹ This would seem to suggest that resources are used less "ideally" by well-developed industries than by young industries. But such a conclusion would be unwarranted without a good deal of empirical investigation, as there are several offsetting considerations. For example, the chances for error in business judgment are greater in new industries. It is to be expected that a higher proportion of entrepreneurs will make mistakes involving capital losses in the early stages of an industry, when future demand and cost pattern are especially problematical. New industries, moreover, are often flooded with "fly-by-night" speculators, most of whom build

³¹ Dr. Abramovitz reaches the same conclusion (*op. cit.*, pp. 207-14).

plants which they hope to sell for a profit in a rising market. They do not necessarily build plants which would maximize earning power. Rather, they rely upon the gullibility of the purchasers.

CONCLUSIONS

If the equation of marginal social cost with price is accepted as a desirable criterion for the allocation of resources, monopoly and price fixing are "bad," since they prevent the achievement of the "ideal." By the same token, pure competition is "good," although individual entrepreneurs are assumed to be motivated by the same impulses in both cases. The seeming paradox of this situation is dispelled when it is recognized that entrepreneurial activities, which at all times seek to maximize the net return to the firm, through the sale of product or the speculative sale of invested capital, need not always result in "ideal" output for the community. The existence of monopoly offers *prima facie* evidence of a social evil. In the last chapter of this essay we shall point out, however, that social costs involved in eliminating monopoly must be weighed against the costs of allowing it to remain before it can be decided whether or not there is waste involved.

As a final word on monopoly, it is appropriate to call attention to the fact that there is no necessary connection between monopoly and the intensity with which particular fixed resources are used. Monopolists and competitors are alike guided by their expectations. They both carry production to the point where the expected cost of an added increment of output will just

equal the expected revenue added by its sale. True, in long-run stationary equilibrium where free entrance to the industry is conceded and where the cost functions of a hypothetical monopolist and a hypothetical competitor are identical, the monopolist would ordinarily produce with a smaller than "optimum" plant, which he would operate at a unit cost higher than the minimum, whereas the pure competitor would produce the "optimum" output with the "optimum" plant.³² But such a hypothetical case is scarcely relevant to the real world, where adjustments to perpetually changing conditions and endless "frictions" constitute the *whole* problem for the entrepreneur, whether he be competitive or monopolistic. In fact, depending on the circumstances, both monopolists and competitors may operate either above or below "capacity." Operation at minimum average costs is *never* a goal for either one. What is more, it would not be a goal in a socialist economy which attempted to produce the "ideal" output under changing conditions, for with changing conditions the social "ideal" coincides with the individual "ideal" only if there is pure competition (income distribution being given). Neither "ideal" is satisfied by the minimization of average costs unless, by chance, minimum average cost equals marginal costs and marginal revenue, so that the individual "ideal" is satisfied; or marginal cost and price, so that the social "ideal" is satisfied.

³² See Mrs. Robinson for a more extensive and detailed comparison of the output under monopoly and pure competition with stationary conditions in Book IV of the *Economics of Imperfect Competition* (London, 1934).

CHAPTER VIII

CRITIQUE OF THREE EMPIRICAL STUDIES OF UNUSED RESOURCES

THUS far in this essay we have been concerned with an analysis of the productive process as it functions in a particular institutional environment. An effort was made to determine why resources are used according to one pattern rather than another. Our objective throughout was the discovery of a criterion of waste. Before we undertake a final integration of our analysis, it will be useful to digress from the realm of formal reasoning for a brief consideration of certain empirical studies whose objectives were closely akin to our own. Frequently a comparison of points of view illuminates and clarifies a position even though the alternative approaches are not fully accepted.

Quantitative measurement implies the existence of a determinate magnitude. Qualitative analysis defining relative magnitudes must, therefore, precede any empirical inquiry if statistical results are to have significance. Since this essay purports to be a qualitative, rather than a quantitative, study of waste, we propose in this chapter to devote our attention to the postulates of the research projects in question rather than to their statistical technique.

THE NATIONAL SURVEY OF POTENTIAL
PRODUCT CAPACITY

Under the auspices of the government-supported New York Housing Authority, Mr. Harold Loeb, with the assistance of some sixty-four technicians, made a statistical survey of plant capacity in America with a view to determining what the consumer could reasonably expect in the way of income were production "limited solely by physical factors and knowledge."¹ The results of Mr. Loeb's study appeared in 1935 in two separate publications. *The Chart of Plenty*,² intended for popular consumption, explains the so-called "Flow Sheet" (described at some length below, p. 176) and presents the conclusions of the studies; whereas the official *Report of the National Survey of Potential Product Capacity* gives a detailed description (with statistics) of the individual industry studies which were made. The staff, according to Mr. Loeb, "was selected from engineers, technical men, and statisticians whose experience covered the full range of our national economy."³

The statistical project of Mr. Loeb and his associates was threefold. They sought (1) to measure the consumer goods and services (in market values) actually produced in 1929; (2) to determine the income (in goods and services) which could have been produced with the physical plant capacity, the technical knowledge, and the labor force which actually existed in 1929, had physical factors alone set a limit to output; and (3) to estimate the magnitude of the income which would have to be pro-

¹ *Report of the National Survey of Potential Product Capacity*, p. 3.

² New York: Viking Press, 1935.

³ P. xiii.

duced in order to satisfy the "needs and responsible wants" of the people.

The survey's measurement of income actually produced in 1929 does not involve methodological problems which need concern us here, although the figure which they give (\$96,000,000,000) is somewhat higher than most other estimates which have been made. It is primarily to their methods of arriving at estimates of "possible" and "required" income that we must turn our attention.

Mr. Loeb in the conclusion of the official report says: "It was realized, as our study got under way, that the concept of 'capacity production' does not apply to the economy as a whole but to specific plants."⁴ A measure of possible capacity could not, they point out, have meaning in agriculture or in the production of certain raw materials. Nevertheless, capacity estimates based upon "authoritative and carefully worked out definitions" were made for branches of the economy which, in the opinion of the authors, are more susceptible to statistical estimates of output capacity.⁵ Unfortunately, the definitions of "plant capacity" are not given in either publication, so that the reader must be content to accept the word of the authors that they are satisfactory for the purpose at hand. As nearly as one can discover, however, separate estimates were made of the aggregate practical capacities of all the fixed plants in each major manufacturing industry as well as in various other non-manufacturing industries. In determining "practical capacity," allowance was made for considerations such as

⁴ *Ibid.*, p. 236.

⁵ *Ibid.*, p. 209.

idleness made necessary by repairs and maintenance, seasonal factors of production (not in demand), poor co-ordination with other industries, *physical* bottlenecks (i.e., plant shortages) in subsidiary industries, and inefficient management.⁶ The estimates did not take into account "customary and institutional practices, which can be changed at will."⁷ For example, the present ineffectiveness of potential demand was not taken into account, since it was said that "buying power is a human institution subject to control."⁸

The "capacity" of each industry was, in the first instance, estimated without serious regard to the availability of an adequate specialized labor force, because the estimates of practical *plant* capacity in each industry "were used as a limit against which to check budget requirements."⁹ The adequacy of the labor supply was only tested after the budget of desirable output had been constructed. "Consequently," the authors are frank to admit, "capacity estimates, given separately on the worksheets, were pertinent only as a first check against budgeted production."¹⁰ They would not give an indication of how much output could be expanded if all industries were to increase production simultaneously.¹¹

⁶ *Ibid.*, pp. 207-8.

⁷ *Ibid.*, p. xvi.

⁹ *Report of the N.S.P.P.C.*, p. 237.

⁸ *The Chart of Plenty*, p. 164.

¹⁰ *Ibid.*, p. 237.

¹¹ In view of this fact, the present writer is at a loss to understand the significance of a statement which appears on p. 41 of *The Chart of Plenty* to the effect that "if the capacities [in a selected group of heavy industries] are weighted by the *market value* of the items, the weighted average of the unused capacities as listed above [in a table setting forth the percentage of unused

"The budget," according to the authors, lists with fair accuracy the goods and services (excluding scarcity values) which the American people *would* consume *if their desires were satisfied!* In other words, the budget is not only an estimate of *possible production* but also of *possible consumption*—excluding the assumption of a radical alteration in habits, such as would result if the practice of aeroplane joy-riding became general or if television sets came into popular use.¹²

The "desires" of the consuming public were determined by basing budget estimates on the "actual expenditures of persons who had attained an income status sufficiently high to release them from critical concern over pecuniary considerations."¹³

Estimates of "actual," "possible," and "required" 1929 production were all combined in a single ingenious chart called the "Flow Sheet."¹⁴ The estimates of "possible" and "required" production of each good were expressed as a percentage of "actual" production. "The flow of materials from the natural resources to the ultimate consumer"¹⁵ was depicted diagrammatically by suc-

capacities in the group of heavy industries] is seen to be 93.7%." This figure was, in the opinion of the present writer, wrongly taken by the authors as an indication that the estimates of unused capacity made by other surveys were too low. No evidence is provided by them to show that the industries which they selected were representative of all industry, nor is it clear that the estimates of capacity in the group of industries selected take into account the probability of at least a shortage of *specialized* labor in the event that all the industries were to expand in the same short period of time.

¹² *Ibid.*, p. 11 (*italics as in the original*).

¹³ *Report of the N.S.P.P.C.*, p. 209.

¹⁴ That is to say, figures giving the volume of production which in fact took place; figures indicating how much could actually have been produced had physical factors alone limited production; and figures giving the budget or the desirable volume of production were all placed in juxtaposition.

¹⁵ *The Chart of Plenty*, p. 6.

cessive columns, each of which represented the market values of goods in one of the six arbitrarily selected "stages" of production. Presumably, bottlenecks in plant capacity would have been indicated if at any stage the *budgeted* output of any commodity had exceeded the "possible" output of that commodity. As it happened, no bottleneck appeared except in housing, which was not treated in quite the same way as other commodities. The authors conclude, therefore, that "no serious shortage exists, and no delay in fulfilling the full budget, except in the matter of shelter, is to be expected."¹⁶ Their study of the labor supply reveals that "our *customary* working force, if subject to 1929 conditions, exceeds the budget requirement by almost a million" and further, that "our *potential* working force exceeds by some thirteen million the number required to provide those goods and services which total \$135,000,000,000 in the budget."¹⁷ Labor, however, was apparently assumed to be perfectly homogeneous and mobile, for no mention is made of the time which it might take to bring about the necessary shift of labor from one industry or trade to

¹⁶ *Ibid.*, pp. 117-18. It should be noted that the present tense is used, although the survey, written in 1934, was intended to describe a situation in 1929. It is never quite clear in either publication whether the estimates of what could be produced refer to 1929 or 1934 or both. The last hypothesis is the most reasonable, for it is apparently felt that physical plant did not undergo any serious change between 1929 and 1934 (e.g., see the Foreword to *The Chart of Plenty*, by Stuart Chase, p. xiv).

¹⁷ *Report of the N.S.P.P.C.*, p. 205 (italics as in the original). The "customary" force is defined as the labor force actually working in 1929 plus an allowance for an annual increase in the working force. "Possible" labor includes all persons between the ages of twenty and sixty.

another or from one region to another in compliance with the budget.¹⁸

The National Survey of Potential Product Capacity does not propose a plan for optimum resource use, nor does it give a general estimate of the magnitude of unused plant capacity. It seeks, rather, to draw up a budget of minimum desirable production and to prove that such a budget is within the realm of physical possibility. Their method of procedure, in the opinion of the present writer, is open to serious criticism on two counts. In the first place, the authors, in their discussion of "possible" output, give no indication that they understand that the costs of production are sacrificed alternatives rather than mere bookkeeping notations. The authors seem to believe that cost is an outworn institution of the capitalist economy which could be disregarded if "physical factors alone limited production." In the second place, Mr. Loeb and his associates speak of human "needs and reasonable desires" as though they were absolute quantities with values unrelated to the incomes of the individuals or to relative prices of consumption goods. The influence of relative prices on the marginal rates of substitution between commodities is not discussed. Thus it is assumed that there is some specific level of income at which the "needs and reasonable desires" of all the people are satisfied. If that level of income is achieved, there is said to be an "economy of abundance." In the eyes of the authors, any income

¹⁸ The authors anticipate an "immediate" rise in the income to "at least" \$135,000,000 (*The Chart of Plenty*, p. 137) as soon as goods are produced for "use" and not for "sale."

which is less than that level bespeaks the continued existence of "scarcity."¹⁹

In planning for the economy of abundance the authors recommend that "goods and services be divided into two classes: those which can be provided in desired quantities, and those which are intrinsically scarce."²⁰ Goods which are "intrinsically scarce" are excluded from the budget because it is held that they do not fall within the "reasonable" desires of the population.²¹ Both of the fallacies to which we wish to draw attention are contained implicitly in these propositions.

The "scarcity" of a good (providing its supply is fixed) is measured by the sacrifice in value which someone is willing to make in order to obtain an incremental unit of the good. In a modern exchange economy the "sacrifice" is made in money, and it is called the "price" of the good. In a barter economy the "sacrifice" would be made in kind. Air has no "scarcity" because its *marginal* desirability in terms of other commodities is zero; whereas Rembrandt paintings are very "scarce" (expensive) because the *marginal* sacrifice in terms of other commodities which would be made for one is high. Thus far there is no problem of cost. The "scarcity" of such goods may be said to be determined solely by their marginal utility, which is expressed in terms of "price." Evidently Mr. Loeb and his associates refer to those goods, the demand for which is great and the supply of which is relatively fixed, when they speak of goods with "intrinsic scarcity." But fixity of supply plainly has

¹⁹ *Ibid.*, pp. 66-67.

²⁰ *Report of the N.S.P.P.C.*, p. 245.

²¹ *Chart of Plenty*, pp. 80-84.

nothing to do with the "reasonableness" of consumer demand. Nor is it correct to say, as the authors do, that "precious stones, antique furniture, oil paintings and so forth, carry dollar valuations which have no relationship to anything in the physical world."²² The prices of these commodities are merely determined by relative demand rather than by cost.

Goods which the N.S.P.P.C. apparently meant to describe as "nonscarce" are those goods whose supply is readily augmentable (i.e., goods which can be supplied in increasing quantities at constant unit cost). In a competitive enterprise economy there is a tendency for the prices of readily augmentable goods to equal their cost of production. Cost, then, is said to "determine" price in much the same sense that the blade of a paper-cutter, rather than the stationary edge, is said to do the cutting. But it is still necessary that there be a given commodity substitution function if price is to be determine.

The authors apparently had this notion of cost-determined price in the back of their minds when they explained that "in the case of *non-scarce* goods, which can be manufactured by mass production and are therefore potentially plentiful, the market price, or dollar value, bears a very definite relationship to the real world of labor and materials."²³ But they failed to see the importance of relative demand. Furthermore, they were confused as to the meaning of cost.

The physical costs of producing a commodity are neither more nor less than the valuable productive op-

²² *Ibid.*, p. 16.

²³ *Report of the N.S.P.P.C.*, p. 4.

portunities which must be foregone in other directions in order to make possible its production. No costs are involved, therefore, when a resource is used which is incapable of rendering valuable service in an alternative use. Payments made for the services of nontransferable resources are known as "rents."²⁴ Rents can only be paid continuously when there is a discrepancy between price and other costs exclusive of rent. That is to say, they represent a residual return. In money terms, rents may indeed be costs in the sense that they represent money outlays to the producer hiring fixed resources, but they bear no relationship to what Mr. Loeb and his associates choose to call the "real world of labor and materials." The distinction between "scarce" and "non-scarce" goods breaks down completely, therefore, when we are told by the authors that "both interest and rent are included under costs."²⁵ If that were the case, *no* commodities would need to be "scarce," according to their definition, since rents may (and will in equilibrium) absorb the difference between price and cost for all commodities. The real cost of producing diamonds in a rich deposit, for example, is trivial compared to the price which they bring; but if the producer of diamonds rents the land from someone else, his *money* costs (plus allowance for risk) will usually leave him an expected net return comparable to the return in other industries.

The proposed budget of the N.S.P.P.C. is not only open to criticism because of the arbitrary exclusion of

²⁴ This is the most general economic definition of rent, a special case of which is rent paid for the use of land or buildings.

²⁵ *Report of the N.S.P.P.C.*, p. 5.

so-called "scarce" goods (a category which, as we have just seen, is specious). We must also take issue with their method of aggregating "the needs and reasonable desires" of the people to arrive at a budget total.

Within limits it is probably accurate to say that every human being needs a minimum of so many calories a day in order to maintain life and health. There would, of course, be quantitative and qualitative differences in the dietary requirements of children and adults, men and women, manual laborers and office workers, and the residents of different climatic zones; but these may be passed over. A certain amount of bodily protection from "the elements" is also physically necessary, although needs differ widely geographically, seasonally, and racially in this respect also. Beyond these basic physical needs, expressed in nonspecific terms, it is difficult to see why the desire for one commodity should be more "reasonable" than the desire for another. If there is some a priori standard of reasonableness, it is to be wondered how the possessor of the secret is to be detected, and still more who will listen to him once he is detected!

The N.S.P.P.C. budget specifications were based on the "liberal-diet" estimates of the Department of Agriculture, so far as food was concerned. Clothing estimates were taken from actual expenditures of professional-class families with incomes between \$5,000 and \$6,000. For housing it was assumed that the average family desires a six-room house or its equivalent.²⁶ Personal, recreational, educational, and other needs or "reasonable desires" were charted along similar lines.

²⁶ *Ibid.*, p. xx.

Sugar (cane), hosiery (women's), kitchen accessories, smoking accessories, cemetery vaults, etc., are a few examples of typical budget items. Retail budget values, consisting of 1929 market prices multiplied by the estimated need in physical units, were assigned to most of the specific items. The procedure was justified on the ground that "in the world of real things, no man can consume much more than another man." Rich men do not, unassisted, consume more in goods than do poor men. The practice of the rich—those possessing property, entrepreneurial, or salary incomes with buying power greater than about \$5,000 (1929 dollars) per year—is to divert part of this buying power to the use of others.²⁷ This argument is founded on three misconceptions.

To begin with, no one goes shopping for "smoking accessories" or "hosiery" in general. It is a particular type of ash tray or a particular color, grade, and size of stocking which is in demand. Arbitrarily to produce a certain volume of any category of good would be senseless unless all goods and services were rationed by some central authority, as they are, to everyone's annoyance, in wartime. Second, consumption, which in economic terms means want-satisfaction, is not confined to the physical digestion of food or to the wearing-out of clothes. If the rendering of a personal service satisfies a want, the service is just as much "consumed," in the economic sense, as is the morning cup of coffee. Wages paid to personal servants are no more a "diversion" of buying power than the payment of wages to the baker

²⁷ *Chart of Plenty*, p. 138.

or to the bus-driver. Wage-earners and the owners of capital resources are both remunerated for the rendering of productive service. It is of no consequence, from the economic point of view, whether the service contributes directly or indirectly to the satisfaction of wants. Nor does it matter whether the wants which are satisfied are morally or aesthetically appealing. Finally, the rather novel conclusion of Mr. Loeb and his associates, that "physical consumption" cannot exceed about \$5,000 a year per person, must seriously be questioned. As we have just seen, economic consumption is not limited to "physical" consumption, but, even if it were, there is no reason to suppose that man's capacity for satisfaction is so circumscribed. It is undoubtedly true that no individual wants more than a limited number of oranges, dark-blue ties, or fountain pens. A large income, however, offers the possibility of more specialized and better-quality clothing, of roomier and more numerous dwellings, of a greater variety of "accessories" and mechanical conveniences, etc. The individual with an income in excess of \$5,000 is not confronted, as the authors seem to believe, with the dismal alternative of either purchasing more and more homogeneous units of "food," "wearing apparel," and "shelter" or else of "diverting" it to other persons. The oversight on the part of the authors of this rather obvious fact probably is explained by their insistence on excluding so-called "scarce" goods from the budget and by their tendency to talk in aggregates when specific items are pertinent.

The remedies proposed by the N.S.P.P.C., which would supposedly enable us to produce immediately the

budgeted income of \$135,000,000,000, do not seem too promising, despite the assurance of the authors that "the answer to the dilemma is obvious."²⁸ In order to "create buying power commensurate with our ability to produce," it is recommended that "nonscarce" goods be centrally produced in quantities prescribed by the budget. The prices of the goods would be fixed "at any price level." The total price (i.e., budgeted quantities multiplied by the units prices) would then be "issued" to the prospective consumers and "canceled when exchanged for goods and services."²⁹ It is not clear whether the price would be "issued" in the form of commodity warrants entitling the bearer to specific commodities (e.g., to a pair of brown oxfords, size 9D, with rubber heels) or whether money would be issued which could be spent freely for anything. If a negotiable currency were given out (the basis of distribution is not disclosed), the price of the commodities would obviously be of the utmost importance in determining what quantities of which commodities would be disposed of. There could be no assurance that all the money would be spent on "nonscarce" goods or that the entire output would be sold at the fixed prices. Indeed, it would be by the merest chance if these things should happen unless an elaborate system of rationing were imposed on the economy. Further explanations are waived, however, on the grounds that "the detailed working out of these measures depends on political and social considerations outside the scope of a statistical survey of physical facts."³⁰

²⁸ *Ibid.*, p. 164.

²⁹ *Ibid.*, p. 162.

³⁰ *Ibid.*, p. 162 n.

We agree with the authors when they say that "the *reasons* for industry having done thus and so instead of something else which might have been done—namely the operation of our productive equipment and higher output rates—are intrinsically bound up in our institutions and habits."³¹ It remains very much a matter of doubt, however, whether the N.S.P.P.C. contributed to a better understanding of our institutions. It is evident, in any case, that their statistical estimates are based on hypotheses which are untenable.

THE DISTRIBUTION OF WEALTH AND INCOME IN RELATION TO ECONOMIC PROGRESS

Concurrently with the N.S.P.P.C., the Falk Foundation made it possible for the Brookings Institution to undertake a study of "The Distribution of Wealth and Income in Relation to Economic Progress." The results of the study were published in four volumes in 1934 and 1935.³² A fifth volume, supplementing the original material, appeared in 1938.³³ Our concern, in this section, is largely with the first volume, *America's Capacity To Produce*, but it is impossible to be fair to one part of the study without some mention of the others. *Industrial Price Policies and Economic Progress*, especially, represents a development of the ideas and statistics brought to light in *America's Capacity To Produce*.

³¹ *Report of the N.S.P.P.C.*, p. 207 (italics as in the original).

³² E. G. Nourse and Associates, *America's Capacity To Produce* (Washington, 1934); M. Leven, H. G. Moulton, and C. Warburton, *America's Capacity To Consume* (Washington, 1934); H. G. Moulton, *The Formation of Capital* (Washington, 1935), and *Income and Economic Progress* (Washington, 1935).

³³ E. G. Nourse and H. B. Drury, *Industrial Price Policies and Economic Progress* (Washington, 1938).

Although the approach of the Brookings Institution is in many respects different from that of the New York Housing Authority, they each begin their studies with the hypothesis that poverty is in large part caused by a chronic deficiency of purchasing power. Both projects emphasize that they are dealing with more than a temporary depression problem. They claim that underconsumption is a permanent malady, inherent in the present form of economic organization.³⁴ In order to make their case doubly conclusive, both studies choose the prosperous year 1929 for empirical investigation. Both seek to demonstrate that even in that year insufficient buying power prevented the full realization of our economic potentialities. It is this conviction that output is curtailed largely through lack of effective demand, which led both groups of investigators to hunt for a measure of productive capacity which would not be dependent on monetary demand. A physical or technical measure appeared to be just what they were looking for.

Mr. Loeb and his associates, as we saw in the preceding section, set out to determine what the American consumer could expect in the way of income "if physical factors were the only limit on production." Brookings undertook to "measure how much more product we could turn out if the demand of the market were such as to keep our plant and labor employed as fully as they could be under accepted hours of labor and with proper standards of maintenance."³⁵ Thus far the two studies have much in common, but here they part company.

³⁴ E.g., see *America's Capacity To Produce*, pp. 12, 19, and *The Chart of Plenty*, chap. ix.

³⁵ *America's Capacity To Produce*, p. 23.

The full title of Volume I of Brookings' study is: *America's Capacity To Produce during the Period from 1900 to 1930 with the Capital Goods and Labor Forces Which She Then Possessed and with the Technology and General Pattern of Operative and Commercial Organization Then Prevailing*.³⁶ Capacity estimates were based on that level of production which would be "practicably attainable under conditions of sustained simultaneous operation."³⁷ Capacity output was expressed as a ratio of actual output. "In such ratios," Dr. Moulton tells us, "capacity is a purely physical concept and thus does not involve the question of whether that productive power would be called into operation by a particular increase in price or whether the putting out of a certain additional product would cause a specified decline in price."³⁸ The measure which Brookings accepted was "an estimate of engineering possibilities as qualified by limitations of weather, consumers' habits, and similar considerations which are social in character rather than economic in the sense of being price-controlled."³⁹ In a word, they were looking for definitions of excess capacity which would indicate the degree to which resources are wastefully used, owing to lack of consumer buying power.

The statistical problem which confronted Dr. Nourse and his associates was one of estimating the practical output capacities of the various branches of the economy which they investigated. To do this the authors say:

³⁶ *Ibid.*, p. 415.

³⁸ *Income and Economic Progress*, p. 169.

³⁷ *Ibid.*, p. 23.

³⁹ *Ibid.*, pp. 169-70.

We have . . . brought together from public and private sources all available yardsticks of capacity and then enlisted expert advice as to how far to make allowance for such factors as unavoidable shutdowns for repairs and cleaning, for the seasonal character of demand, and for idle plants and other obsolete equipment.⁴⁰

The economy was divided into three segments: raw materials, fabrication, and services. Each of these, in turn, was divided into industries, such as meat-packing, the dairy industries, flour-milling, and the like. Capacity estimates were made for each industry where it was thought that a ratio of plant capacity to output could have meaning.⁴¹

The labor supply available in each branch of industry was also surveyed. Deficiencies or surpluses in relation to capacity output were recorded, and the problem of the adequacy of the labor force was considered in aggregate in a separate chapter. Here it was discovered that, if the economy had operated at full capacity in 1929, the the manufacturing industries would have needed roughly one million more men than were habitually employed in those industries, and the mining industries would have needed twenty thousand more men. This, it is held, would not have caused a serious bottleneck, since about 1,005,000 men would not have been required even at capacity output in other industries. Agriculture alone, for example, could have released five hundred thousand.⁴²

"The conclusions arrived at in the analyses of the

⁴⁰ *America's Capacity To Produce*, p. 27.

⁴¹ It was felt that the most satisfactory results were obtained in measuring the capacities of the mineral and manufacturing industries (*ibid.*, p. 415).

⁴² *Ibid.*, p. 414.

several branches of industry," to quote the words of the authors, "mean that our productive system as a whole was operating at about 80 per cent of capacity in 1929 and slightly less than that if we take the average of the five years 1925-1929."⁴³ This figure was increased by 5 per cent to allow for the following three qualifications. (1) It was recognized that the use of a weighted average of excess capacities might not be realistic in determining how much an integrated economy could expand output, since the percentage of excess capacity was much higher in some lines than in others. There would be huge surpluses in some industries and deficiencies in others. The authors believe that the most serious bottlenecks could be removed, but they do not venture a guess as to how long it would take. They make some allowance for this consideration, however, because they admit that in extreme cases excess capacity would never be filled. Adjustments in production would also be necessary, it was conceded, in order to take care of the shifts in demand which would accompany higher individual incomes. A less than proportional increase in the output of agricultural products was allowed for on this account. (2) Full capacity could probably never be completely realized, the authors tell us, because of the numerous frictions and interruptions to work which could inevitably become more serious as full capacity is approached. (3) Finally, it was pointed out that marginal units of fixed resources are often obsolescent and hence less efficient. To the extent that these obsolescent plants were given a full-capacity rating, the capacity figure would be exag-

⁴³ *Ibid.*, p. 416.

gerated. On the other hand, up to a point, efficiency is increased by the more intensive use of the fixed equipment. Furthermore, plants which were wholly inactive in 1929 were not included at all in the study. If some of these could, in fact, have been successfully used, as output expanded, they would have helped offset the exaggeration in the estimate of capacity due to the inclusion of partly obsolete plants. All things considered, it was decided that a 5 per cent allowance for these three factors was sufficient.⁴⁴

So far as the thirty-year period between 1900 and 1930 was concerned, Dr. Nourse and his associates failed to find any pronounced trends in the degree to which our productive resources were used.⁴⁵ In the volume entitled *America's Capacity To Consume*, however, Messrs. Leven, Moulton, and Warburton found evidence which proved to their satisfaction "that the purchasing power of the great masses of the population is quite inadequate to absorb, at the prices prevailing, the output of our productive establishment."⁴⁶ This fact they attributed to the tendency toward an increased upward skewness in income distribution which led, according to the authors, to a larger and larger volume of unspent savings during the period in question.⁴⁷

⁴⁴ *Ibid.*, pp. 417-20.

⁴⁵ *Ibid.*, p. 296.

⁴⁶ P. 132.

⁴⁷ During the 1920's Dr. Moulton claims that savings were absorbed in large part by the stock-market inflation (*The Formation of Capital*, chap. x). There is not place in this essay for a criticism of this or others of the under-consumptionist doctrines of the Brookings study. They have, however, been subjected to critical examination by R. T. Bye, "Capital Formation and Inequality," *American Economic Review*, Vol. XXVI, No. 4, and by H. H. Villard, "Dr. Moulton's Estimates of Saving and Investment," *American Economic Review*, Vol. XXVII, No. 3, and "Moulton's Theoretical Analysis," *Political Science Quarterly*, Vol. LIII, No. 3.

The important point to be resolved, so far as this essay is concerned, is to determine whether the Brookings study did, in fact, arrive at a ratio of resource utilization which could, in some sense, be called a measure of waste.

Let us examine their definition of "full practical capacity." It is stated repeatedly in the first four volumes of the study that the desired measure of capacity is a technical, rather than an economic, measure. Prices, they say, do not concern them. In practice, the authors were unable to avoid making implied assumptions about price, for the technical methods of production, as we have pointed out before in this essay (see chap. ii), are not, and cannot, be determined independently of such economic forces as demand and cost, which ordinarily express themselves through variations in price.

Obsolescence, for example, is almost entirely an economic problem. A fixed resource is said to be obsolete either when a change in cost relationships renders it incapable of earning a rent or when changes in demand relationships make it valueless. On the cost side, the change in value may be due to physical deterioration, to the introduction of a new technique or mechanical invention, or to a change in the relative prices of the transferable resources used in collaboration with the fixed resource. On the demand side, the value of a fixed resource may be affected primarily through shifts in the demand curve for the commodity which it produces. These shifts in demand are, in turn, materially influenced by relative prices. Plainly, Brookings' calculations with regard to obsolete and obsolescent capacity are relevant solely in connection with a given fabric of

prices. Even then, technical efficiency is only one of the factors determining the "capacity" of a fixed resource.

Estimates of the probable effect of variations in the level of income on relative demand are even more dependent on relative prices than are rates of obsolescence. It is utterly futile to speculate on the probable proportionate distribution of expenditures (i.e., consumer income) upon different commodities unless the prices of the commodities are known. In calculating the effect of increased purchasing power, therefore, Dr. Nourse and his associates must implicitly have assumed that relative prices would remain constant. But to assume that relative prices would remain constant as output expanded implies the additional assumption that all output could be increased by virtually the same percentage at uniform cost, for, if the cost functions of the different plants and industries have different slopes, relative prices will change as output increases. We are forced to the conclusion, therefore, that the authors were deluding themselves when they claimed to have found a measure of "technically practicable capacity." In so far as their definition of capacity describes an "optimum" use of resources at all, it describes production at the minimum point of the long-run average cost curve for the individual firm. We have seen that this point is rarely, if ever, a true "optimum" under changing conditions (see p. 26 ff.). It must further be objected that the price assumptions which have to be made in order to make their discussion consistent are highly unrealistic.

Another weak point in the analysis of *America's Capacity To Produce* is the discussion of the labor supply.

Even if we were to accept the definition of practical plant capacity which the authors propose, there would still be reason to doubt the validity of their conclusion because of the summary way in which the labor supply is treated. Labor is patently not a homogeneous mass which can be "taken as a whole."⁴⁸ Individual workers are fitted for particular jobs in particular industries. Customs, family connections, lack of knowledge, and high transportation costs all tend to tie them to particular geographical localities. Aggregate figures on employment are not likely to be significant unless in addition a detailed study is made of the skills and location of the men available as compared with the location and nature of the particular jobs to be filled. When we are told, therefore, that operation of our productive plant at "full capacity" would involve the transfer of over two million men to entirely new sectors of the economy (minor industrial shifts are not mentioned at all), there is good reason to be skeptical. The proposal becomes still more dubious when it is realized that, even if all the necessary shifts could be made without loss of time or cost, the Brookings' figures indicate that there would be a shortage of several thousand workers. That these queries about possible bottlenecks in labor are not purely fanciful is evidenced by the fact that at several times during the last ten years there have been serious labor shortages in certain industries in this country, although at no time during the period have there been less than five or six million men unemployed. On the other hand, it is

⁴⁸ *Income and Economic Progress*, p. 34.

obvious that bottlenecks are less serious over longer periods of time.

To recapitulate, "excess capacity" in the first four volumes of Brookings' study of "The Distribution of Wealth and Income in Relation to Economic Progress" was intended to measure in percentages the difference between the goods and services which were actually produced and those which could have been produced had everything but the existing method of distributing income been exactly as it actually was. One might call their definition of "excess capacity" an index of the wastes of the distributive system. We have taken issue with this definition (1) because it was not, as it claimed to be, a ratio of purely technical quantities; (2) because the assumptions with regard to price implicitly contained in it are unrealistic and lacking in meaning; and (3) because the problem of bottlenecks in labor was inadequately dealt with.

In the fifth volume, *Industrial Price Policies and Economic Progress*, the position taken by Messrs. Nourse and Drury was somewhat shifted. Doubtless in the intervening years the authors had been persuaded that a purely technical measure of "excess capacity" was not useful. At any rate, the criterion of "capacity" production which they used in the last volume was essentially that rate of output which minimizes unit costs in the long run. For example, we find it stated that "only as the best technique is used and output brought to the volume where the capacities of the most expensive indivisible unit which must be used in this most efficient technique of operation and management is fully utilized

will minimum cost be achieved.”⁴⁹ This is quite a departure, since in the earlier volumes cost was rarely mentioned and minimizing cost was never suggested as a goal. Further evidence of their acceptance of an economic, rather than a technical, measure of “capacity” is given in another passage stating that “from the percentage utilization which just keeps the company operating, every step forward up to practical capacity operation thus entails a lowering of average costs.”⁵⁰

Industrial Price Policies was written because in *Income and Economic Progress* several possible methods for improving the distribution of income (and hence for stimulating increased production) were mentioned but not elaborated. Among them were taxation, higher wages, financial manipulation, and lowering prices. Of these, the most promising was thought to be the last. Consequently, it was considered worth while to inquire more extensively into the reasons for existing price policies and into means by which prices could successfully be lowered.

In addition to a good deal of historical and descriptive material, *Industrial Price Policies* contains a discussion of the relationship between prices, output, and welfare. This latter part may be summarized in brief.

⁴⁹ *Op. cit.*, p. 94.

⁵⁰ *Ibid.*, p. 95. In view of these two unmistakable commitments to the minimum point on the cost curve as a criterion of capacity output, it is rather surprising to find a reversion later on to the definition used in *America's Capacity To Produce*. The passage reads: “Here and elsewhere in the chapter ‘capacity operation’ of course means the sort of result practically attainable under existing conditions of technology and general organization of industry as discussed at considerable length in *America's Capacity To Produce*” (Nourse and Drury, *op. cit.*, p. 258 n.).

Industry in America today is said to be predominantly monopolistic. The price policies of monopolistic concerns are subject, within limits, to the control of the entrepreneur. Entrepreneurs characteristically keep prices higher than the competitive level when they can. This is bad because the public welfare demands that output be pushed to the point where average costs are minimized, and average costs will not be a minimum unless prices are at the competitive level. "Enlightened" price policies are crucial to a smooth-running and efficient economy. The authors tell us:

It is hardly too much to say that price policy has almost everything to do with the full functioning of our economic system; that it is, in fact, on the astute and skillful setting of prices, computation of costs, estimation of earnings, and capitalization of the earnings rate into productive outlay that the health, activity, and growth of our modern business system primarily depends. In other words, it is—under democratic institutions—only through the adjustment and readjustment of prices (with the ultimate consumer always in the forefront of consideration) that society can promote full and continuous utilization of its productive capacities.⁵¹

The achievement of the social ideal (i.e., the "full and continuous" use of plant⁵²) is prevented largely by the stupidity and lack of foresight of entrepreneurs, according to Messrs. Nourse and Drury. The entrepreneur, they point out, is concerned

with promoting the prosperity of his company. In proportion as he interprets that prosperity in broad terms and in the long run, his con-

⁵¹ *Industrial Price Policies*, pp. 85-86.

⁵² It is asserted, for example, that "we cannot say that we have sound price policies until we present the proof in terms of capacity operation" (*ibid.*, p. 274).

cern becomes identical with that of the economist who wants to see the pricing problem so handled that the conduct of business will minister most fully to the welfare of the people.⁵³

The alleged shortsightedness of businessmen is attributed to several causes. Frequently entrepreneurs keep prices high because they do not realize that the demand for their product is elastic. Some entrepreneurs fail to reduce prices because they do not realize that by reducing prices and expanding output they would be able to reduce unit costs. In times of low demand, entrepreneurs foolishly maintain prices so as to cover overhead. This is stupid, as it indicates a misunderstanding of cost. Losses would at least be diminished if prices were reduced. Or, again, it is pointed out that output can be increased by price discrimination. Seasonal demand can often be tapped in this way, and discrimination in different markets may also be effective as a means of expanding output. The development of by-products is another method of making full use of plant.

The analysis in *Industrial Price Policies* contains three errors in reasoning of a rather fundamental sort. In the first place, minimizing average costs is not an ideal of resource use for either the individual or society. It happens that in long-run competitive equilibrium, average costs will be a minimum, but the social criterion of ideal resource use for any unit of that resource is always the equation of marginal cost and price (see p. 6). Except in long-run competitive equilibrium, therefore, operation at what the authors term "capacity" output would be advantageous neither to the firm nor to society

⁵³ *Ibid.*, p. 105.

(see chaps. ii and iv). "Excess capacity," as they define it, is not a measure of waste.

Second, when there is monopoly there is a conflict of interest between the individual entrepreneur and society. The individual entrepreneur, in seeking to maximize his expected net return, will increase his output until the net increment in revenue added by the last unit produced is equal to the net increment in cost associated with its production (see chap. iii). Since, under monopoly, incremental revenue is less than average revenue (i.e., price), it will not be to the advantage of the entrepreneur to carry production to the point where marginal cost is equal to price, for by so doing he would diminish his net revenue (see chap. vii). Thus it is incorrect to say, as Messrs. Nourse and Drury do in effect, that it would be to the advantage of monopolists as well as society in general, to reduce prices to the competitive level.

Finally, along the same lines, it must be pointed out that, although all the allegations against entrepreneurs for their lack of foresight may be correct, the "dynamic" price policy which the authors propose would not rectify the discrepancy between the private and the social interest when monopoly is involved. Monopoly revenue would, indeed, be maximized, but the social ideal would not be achieved. In other words, what the authors choose to call "the new philosophy of price"⁵⁴ is merely a common-sense philosophy of price. Such a policy is certainly to be recommended where it is not already accepted in that private wastes, at least, would thus be

⁵⁴ *Ibid.*, p. 274.

eliminated, but it will not dispose of the main issue involved in connection with monopoly.

In the opinion of the present writer the five-volume project of the Brookings Institution missed its mark to the extent that it was hunting for a measure of "excess capacity" which would give some quantitative indication of the wastes of the system of distribution. It has been our contention in this essay that such a measure is not statistically determinate. Examination of empirical efforts in that direction serves only to strengthen our contention that the "best" use of resources is not to be confused with "full" use and that the "optimum" output of a product is not necessarily the same as "maximum" output.

PATTERNS OF RESOURCE USE

The third empirical study relating to the problem of waste, which we shall briefly consider in this chapter, is a project of the National Resources Committee entitled *Patterns of Resource Use*.⁵⁵

In setting forth the objectives of the study we cannot do better than to quote the words of the authors themselves.

Under prevailing technical conditions, what is the level of economic activity which would absorb practically all of the great army of unemployed? What would be the market for commodities and services, industry by industry, at such a level? Is it possible to lay a foundation for answering these questions through the discovery of continuing relationships between such factors as employment, production, and consumer income? On the basis of such relationships can coherent

⁵⁵ G. C. Means and Associates (preliminary edition for technical criticism [Washington, 1939]).

patterns of resource use be developed which would show for the different parts of the national economy the volume of production and employment most likely to arise at any given level of national activity?⁵⁶

It will be seen from these questions that the approach of the National Resources Committee to the problem of waste was rather different from that of the New York Housing Authority or the Brookings Institution. Instead of asking what income consumers could expect under different levels of effective demand, or how much "excess" plant capacity could be attributed to the defective distributive system—questions which, we saw, proved to be unfruitful—the National Resources Committee endeavored to determine the probable composition and volume of production which correspond with the reasonably full employment of labor, assuming no fundamental technological changes or changes in taste. This approach has, at the outset, two important advantages over the others. First, it properly gives a central position to the question of unemployed labor. Second, it avoids the necessity of distinguishing between a lack of use of capital resources which is wasteful and a lack of use which is not wasteful. Let us see if the procedure and conclusions of *Patterns of Resource Use* show up in an equally favorable light.

As a first step, Dr. Means and his associates divided the economy into eighty-one segments or industry groups. For each segment the basic relationships between employment and output and between consumer income and output were statistically determined. That

⁵⁶ *Ibid.*, p. 1.

is to say, historical continuities in the behavior of related variables were observed in each segment, and the nature of the relationships was expressed in formulas. Two formulas were fitted to the data in most segments (138 formulas were fitted in all). When there was no simple relationship between output and employment or between output and consumer income, it was necessary to introduce other elements. The most common additional element was a time trend which usually represented the net effect of more than one trend element. In some few cases price was included as a separate element, but ordinarily price was assumed not to vary or else to vary with another element (e.g., secularly with time or cyclically with consumer income or employment), so that no special assumption was necessary. A few formulas contained several elements with highly complex relationships.⁵⁷

In order to test the closeness with which each formula described the interrelationships of the elements contained in it, three tests were applied. (1) The formulas were compared with the actual data; and the difference, indicated by the standard error of estimate (expressed as a ratio to the mean value), was determined. (2) The formulas were judged on the basis of the economic reasonableness of the relationships discovered. (3) The time period covered was extended to subsequent years, and the average residuals between the actual data and the extrapolated values were computed. A fourth test, the comparison of the formulas with periods in time subsequent to the period in which they were constructed,

⁵⁷ *Ibid.*, pp. 6-10, 75-82.

was suggested as being the most conclusive test; but, for obvious reasons, it was not tried!⁵⁸

The next step, once the underlying relationships were established in each segment, was the fitting-together of the formulas into patterns of resource use. Appropriate assumptions with regard to the size of consumer income, the level of industrial activity, and the characteristics of income distribution were made. In addition to these general assumptions, it was sometimes necessary to make assumptions about specific prices and other special elements. In the process of converting the original formulas to patterns of resource use a number of new equations were constructed showing relationships between the segments which had not been necessary before. Finally the assumed numerical values were substituted in the formulas "so as to obtain a statement of the conversion activity likely to take place in the light of the system of assumptions adopted and the relationships previously derived from experience."⁵⁹

A definite functional relationship (expressed in a formula) was assumed to exist between the levels of industrial production and consumer income. On the basis of this relationship values for the probable output of each segment were computed corresponding with consumer incomes of 50, 60, 70, 80, 90, and 100 billion dollars (in 1936 dollars). Factors represented by time trends were given values as of 1938.⁶⁰ This calculation indicated that the man power available in 1938 would probably have been fully absorbed at an income of 88 billion dollars (1936 dollars; had the price level risen to the 1929

⁵⁸ *Ibid.*, pp. 14-16.

⁵⁹ *Ibid.*, p. 87.

⁶⁰ *Ibid.*, pp. 87 ff.

level, the same output would have been valued at 105 billion dollars).⁶¹ It was recognized that bottlenecks in labor and in equipment would have prevented the attainment of this level of income (and hence of full employment) in 1938. An attainable level of income for 1938 was estimated to be 75 billion dollars (in 1936 dollars), which would have left approximately 5 million unemployed laborers.⁶²

The patterns do not, the authors warn us, attempt to forecast the probable production in any particular year, "since no forecast is made as to which set of conditions is most likely to arise in that year."⁶³ Rather they indicate the probable patterns of consumption which would accompany a given set of conditions, assuming that continuities which have manifested themselves in the past will continue to hold in the future. The patterns, moreover, do not pretend to describe an ideal allocation of resources at any level of employment or of consumer income. They merely describe that allocation which, in the light of past experience, probably would take place at different levels of consumer income providing there were no unanticipated discontinuities in the basic relationships involved. Full employment, the authors suggest, should be regarded as "a minimum goal toward which national policy might be oriented."⁶⁴

Most of the criticisms which should be raised in connection with *Patterns of Resource Use* were anticipated by the authors and are included in the text. This aware-

⁶¹ *Ibid.*, p. 33.

⁶³ *Ibid.*, p. 22.

⁶² *Ibid.*, pp. 36-37.

⁶⁴ *Ibid.*, p. 34.

ness by the authors of the limitations of the study naturally increases the confidence of the reader in the trustworthiness of their scholarship. Nevertheless, the admission that there are limitations does not remove the limitations. Some of them, moreover, need rather more emphasis than they are given in the text. We will do well, therefore, to call attention to a few of the more important weaknesses of the study. As in the case of the other studies considered in this chapter, we shall not undertake to criticize the statistical techniques employed.⁶⁵

To begin with, there is the question of prices. Very few of the formulas (16 out of 138) contained specific elements pertaining to relative price. The ones which did, encountered difficulties because, for each particular pattern of resource use, a special assumption had to be made with regard to the values of the prices in question. There was no thoroughly satisfactory way of deciding what the particular price relationships would be at a specific point in time or at a particular level of income—to some extent the decisions were arbitrary. Even in the formulas where no specific price element was included, it was necessary to assume that the demand for the product was completely inelastic with respect to price, or that price remained constant, or else that it varied consistently with one of the other elements. Thus, any

⁶⁵ Mr. A. P. Lerner, in a forthcoming article entitled "Resource Use—'Patterns' and 'Planning,'" has claimed that in a number of instances the curves and formulas used by Dr. Means and his associates were selected so as to give an elegant appearance, in a manner not altogether in accord with the most reliable statistical techniques. I am indebted to Mr. Lerner for several other points in the following discussion.

public policy (designed, say, to bring about full employment) which altered the customary relationship between price and the other elements would impair the future reliability of the patterns of resource use. The same problem arises to a lesser degree in connection with all the continuing relationships which were observed. Patterns of resource use can only be used as a basis for prediction as long as the elements are not tampered with. If the government alters any of the relationships, discontinuities are naturally to be expected, and the formulas must be readjusted.

This brings us to the question of applicability. One of the most conspicuous facts about the study is the absence of any discussion as to how the patterns could be of practical value. The only two passages in the book which hint at possible uses to which they could be put may well be quoted.

In the appraisal of the tentative patterns of resource use which are presented in this report, it should be clearly recognized that they do not represent operating programs. They lack the necessary precision and reliability for this purpose. Rather they constitute background information in the light of which individual producers or industries can formulate their own operating programs and assist in the development of more effective national policy.⁶⁶

On the following page we are told that "such patterns can serve as additional background for the development of national policy." But beyond these rather vague references there is no mention of policy implications.

It is not clear just how the authors expect producers to avail themselves of the patterns in forming their operating programs. Plainly, the patterns could not be

⁶⁶ *Patterns of Resource Use*, p. 1.

used as a basis for planning future production unless the level of income for the coming year were known. But in the absence of a government policy which could guarantee some level of consumer income, it is difficult to see how the information supplied by *Patterns of Resource Use* could contribute to more accurate business-forecasting. At best, it would help the entrepreneur, who, for some reason, was more adept at predicting the national income as a whole than the market demand for his own product.

It seems reasonably safe to conclude that more specific mention of policy was omitted because a discussion of policy by a government agency would have aroused unfavorable comment from persons opposed to extensive government planning; for it is evident that effective use of the data furnished by *Patterns of Resource Use* would be possible only if the government were able to control the level of consumer income. Deficit financing in the doses in which it has been tried, having proved to have been insufficient for this purpose, it presumably would be necessary to resort to more drastic measures. One possibility would be outright government operation of industry. A less extreme method would be the fixing and guaranteeing of prices by the government at levels which would insure full employment. Other intermediate policies might also be suggested. But whatever the means of control, the patterns would require constant readjustment, since an effective policy would undoubtedly, as we have seen, change the historical relationships on which the patterns were based. The authors apparently had something of this sort in mind

when they pointed out that "since the patterns actually presented in this report are derived from data on economic behavior in an unstable economy, it is probable that they in turn represent unstable conditions."⁶⁷

Before the patterns could successfully be used as guides to government policy, it would be necessary to obtain more reliable information on where bottlenecks would occur in labor and equipment and how long it would take to remove them. The National Resources Committee, apparently in recognition of this fact, has already made a study of potential bottlenecks in the iron and steel industry.⁶⁸ Unfortunately, however, this study did not include a survey of potential bottlenecks in skilled labor—an omission which detracts materially from its value.

To state these policy implications of *Patterns of Resource Use* suggests adverse criticism or praise, depending on one's political philosophy. But in either case it must be conceded that the National Resources Committee has forged an instrument which, after the necessary refinements have been made, might be of great assistance to a planned economy. The practical use of the pattern in an enterprise economy something like our own is more difficult to discover; but, even if the practical value is not great, the study makes a real contribution to a better understanding of fundamental economic relationships.

⁶⁷ *Ibid.*, p. 2.

⁶⁸ "Capital Equipment Requirements of Iron and Steel" (unpublished; prepared in 1938). It is the understanding of the writer that studies of bottlenecks in other industries are to be forthcoming.

In the opinion of the present writer, *Patterns of Resource Use* is open to censure only on the ground that it gives the impression of pleading a cause without acknowledging the fact directly. It points to an evil—the wastes of unemployment—and, by implication, suggests a remedy. But the full import of the remedy is left for the reader to discover. Even this criticism is not entirely fair, however, since the report was never published for general distribution. The present preliminary edition was printed for technical criticism.

A fourth study, the Report of the Columbia University Commission entitled *Economic Reconstruction*,⁶⁹ might properly also have been considered in this chapter. There are several reasons why we do not propose to do so. (1) The Columbia Study was less comprehensive than the others. (2) The Commission's use of questionnaires which they sent out to businessmen and engineers in order to determine the percentage of unused capacity in the economy, though it revealed a number of interesting facts, did not shed much light on the problem of waste. (3) Finally, the other three studies provide a sufficiently wide basis of comparison, making a fourth one superfluous.

The three studies considered are not comparable, in the sense that each of them used empirical data to measure or define a different quantity or relationship. On the other hand, all three, when reduced to their simplest terms, were primarily concerned with the wastes of unused resources. The National Survey of Potential Prod-

⁶⁹ *New York*, 1934.

uct Capacity sought to demonstrate that with appropriate changes in our financial institutions, our business traditions and our political institutions, but without changes in wants, resources, or technology, it would be possible to produce for everyone in this country at least a minimum of necessities and everyday comforts. The Brookings study of "The Distribution of Wealth and Income in Relation to Economic Progress" attempted to show that our national income, even in 1929, could have been appreciably larger than it was had we made certain changes in the system of distribution, but left untouched all other institutions, customs, wants, resources, and technology. Finally, the National Resources Committee indicated that, in view of the continuing relationships which exist in the economy, it is possible to predict the level of employment which will accompany a given level of consumer income. From this it was easy to infer that appropriate changes in our political and economic institutions might make possible the elimination of unemployment through the control of the level of consumer income.

It is significant that each study drew attention to a particular aspect of waste. In each case remedial action involved some kind or degree of institutional change. This is a clue which, if pursued, may be productive of interesting results in the next and final chapter, where we shall discuss the elements of waste.

CHAPTER IX

WHAT IS WASTE?

RECAPITULATION

AT THE very outset in this essay we outlined the conditions which must be satisfied if resources are to be used ideally in a democratic society. The ideal which we set up was to be used as a measuring-rod against which we might compare resource use in the real world. It was hoped that, by so doing, it would be possible to gain insight into the problem of waste.

Before plunging into an analysis of the forces which motivate production and condition resource use in the real world, we stopped to examine certain basic concepts, such as production and capital, which required specific elucidation in order that ambiguities might be avoided at a latter stage in the argument.

Next we sought to give our study historical perspective by reviewing briefly the literature on unused resources. We found that, except for certain groups of economic "heretics," there was a surprising lack of interest in unemployment or unused capital resources among economists generally up until the last few decades. More recently, we discovered, the subject has become one of the most hotly debated issues in economics. Many economists have attempted (explicitly or implicitly) to define "unused capacity" in such a

way that it can always be looked upon as wasteful. We took issue with two such definitions of full use of productive capacity which have been widely accepted in this country, on the ground that they do not succeed in distinguishing between useful and wasteful resource use when changing conditions or monopoly are involved.

We began the body of the essay with an analysis of the objectives and plan of action of the entrepreneur. We studied the smallest productive unit, where policy decisions are made first, because we felt that through such a study we would be able to understand why resources are used as they are in the real world. Leaving aside, for the time being, consideration of the best interest of society as a whole, we discovered the criteria which make for optimum resource use from the point of view of the individual firm. The production-plan approach which was developed proved to be helpful in our understanding of production under changing and uncertain conditions as well as of production in a stationary society.

Using the production plan as an instrument of analysis, we proceeded to a study of the effect of various types of change in cost and demand conditions on the use of resources by entrepreneurs. It was observed that anticipated variations in cost and demand are taken into consideration by the entrepreneur when the production plans are drawn up. Changing conditions lead to planned changes through time in the intensity of use of fixed resources. Unanticipated changes make necessary periodic alterations in production plans and hence in resource use. But so long as the entrepreneur at each

moment in time makes the best use of available means of production (in the light of his knowledge of past, present, and probable future conditions), he may be said to use those resources ideally, so far as he is concerned. It was concluded, therefore, that unused capacity need not be an indication of the existence of waste to the firm. It was further shown that unused capacity is not a magnitude which can usefully be measured, since any unit of measurement which could be devised would necessarily be in a constant state of flux in a changing world.

In our study of production plans and change in chapters iii and iv we abstracted from monopoly conditions and from institutions which might interfere with a smoothly functioning competitive price economy, because it was impossible to consider all complications simultaneously. It was recognized, however, that no study of resource use in the real world could have significance unless it took into account the influence of the actual institutional framework which exists in the society in question and also the effect of monopoly on resource use.

In chapters v and vi we undertook a brief descriptive analysis of the outstanding economic, industrial, and political institutions which influence resource use in the United States at the present time. We attempted to point out where and how these institutions interfere with the achievement of our ideal of resource use set forth in the first chapter. Divergence between actual conditions and ideal conditions, we suggested, may quite possibly indicate the existence of social waste, but

it is far less likely to bespeak waste to the individual firm. Similarly, in chapter vii, where we discussed the influence of monopoly and price-fixing on resource use, we pointed out that whereas monopoly elements in the system give *prima facie* evidence of social waste, they are rarely indicative of waste to the individual firm. The reader was reminded that waste due to the nature of particular institutions or to monopoly may, but need not, manifest itself in the form of unused capacity.

In chapter viii we criticized three empirical studies of unused capacity in terms of our earlier analysis.

Now, at last, we are in a position to pull together the various threads of our inquiry. We hope to reconstruct from them a foundation for a theory of waste in a democratic society.

GENERAL CHARACTERISTICS OF WASTE

If this essay has served its purpose, it should by now be apparent that waste is not a single problem but a complex of problems. Whenever the word is used thoughtfully, "waste" denotes an unfavorable comparison between an actual situation and another possible or ideal situation. Quantitative measures of waste must necessarily be expressed as ratios of the actual compared with the possible or the ideal. Waste is a degree, not a magnitude. The foregoing are the attributes of waste common to all the forms which it may assume. A more specific definition requires a classification rather than a simple formulation.

Waste to whom? This is the first question to be asked in the search for a classification. Waste to the individual

is plainly not necessarily the same as waste to society. But "society" is a term which, though convenient, is subject to ambiguities. Does it refer to a majority of the population? If so, what constitutes a majority? When the interests of society conflict with the interests of the individual or of a minority group of individuals, the question arises as to how far the majority interest is to be given precedence over the minority interest. Must all of the interests of the minority be subordinated to those of the majority in order to minimize the wastes to society as a whole? Or is there such a thing as varying intensity of waste? In other words, might a greater waste to the minority offset in importance a lesser waste to the majority? By what standard can these relative quantities be measured?

But questions concerning the object of waste lack direction without the further question: Waste of what? One possible answer is, waste of productive resources or capacity. That is to say, *actual* output in goods and services can be compared with *possible* or *ideal* output, and the ratio might be considered a measure of waste. This represents, essentially, the point of view of the three empirical studies which were discussed in the preceding chapter. It is to be wondered, however, how far the totality of individual or social interests are bound up with the economic interest. May not the pursuit of an economic objective be injurious to values noneconomic in character? If this is so, it should be possible to speak of "noneconomic wastes" as well as "economic wastes." It is more difficult to think in ratios when aesthetic, ethical, cultural, or political values are the

subject of discussion, but comparisons of noneconomic magnitudes are fully as significant as the comparison of economic magnitudes. Noneconomic wastes complicate the issue by introducing the problem of comparative values in a sense beyond the given individual preferences measured by purchasing power, which are considered in economics. At the same time, they make waste a truer and broader target for corrective action.

Only after waste has been defined in relation to a given object and in terms of specified magnitudes of unequal desirability is it possible to form a policy designed to eliminate waste. *From a policy point of view, waste cannot be considered a problem at all unless there is a serious possibility that purposive action on the part of the individual or group concerned may effect a change in the existing situation which will be in the direction of the ideal.* It follows, moreover, that the direct and indirect costs of eliminating waste must be taken into account before it can be said that a given policy may be effective. Thus, for purposes of policy determination the actual situation must be compared with the net improvement which is possible rather than with any supposed ideal situation undiscounted by the costs of change. The "best" program for eliminating waste is the one which contemplates aggressive action up to the point where the advantages to be derived from eliminating an additional degree of waste are precisely offset by the costs of eliminating that additional degree. This principle has universal applicability regardless of the size of the group proposing to take action. It presupposes, however, that the totality of wastes, of values, and of costs will be taken into consideration. Thus a program which envis-

aged the elimination of an economic waste without recognizing that noneconomic values were also at stake might well succeed in its purpose, but at the same time it would effect a net impairment to the total interests of the group concerned. It will be observed that the problem of the entrepreneur seeking to maximize his expected net revenue constitutes a special case of the general problem of eliminating waste. We shall have more to say on this subject in the discussion which follows.

THE HIERARCHY OF WASTE

A classification of waste may logically be based on the size of the group taking action, considered in conjunction with the range of environmental conditions which falls within its sphere of action. Thus, conditions which may be considered wasteful to a group whose sphere of action is extensive, would more properly be looked upon as regrettable barriers or, perhaps, merely as landmarks in the environmental topography of a group whose sphere of action was circumscribed.

The family is normally the smallest group consciously to concern itself with improving its well-being by making use of available means so as best to satisfy a complex of ends. Many of the objectives of the family are similar to those of larger social groups. The means at their disposal for satisfying those ends, however, are nearly always more limited than are the means of a larger group. But before we proceed farther, the validity of our assumption that social groups direct available means to the achievement of definite ends must be further explored and qualified.

In the first place, it must be recognized that a large

part of human behavior is traditional and falls into an intermediate zone between behavior which is entirely thoughtless and impulsive and behavior which is pre-meditated and planned. Second, when behavior is planned in certain fields of activity, it is probable that there will be no conscious co-ordination between actions in the different fields. Third, objectives are almost never sharply defined, single-valued, or permanent. This is especially true in connection with the activities of consumer groups, of which the family is the most important example. Physical needs, such as food, clothing, and shelter, compete and often conflict with each other and with nonphysical desires for pecuniary income for its own sake. Few decisions are based uniquely on physical needs except, perhaps, in the case of persons who are virtually destitute. Otherwise there is almost certain to be an admixture of a desire to satisfy aesthetic or cultural or other values even in decisions which appear to be primarily physical. The allocation of income is further complicated by the fact that many types of expenditure stimulate new wants instead of "satisfying" old ones in any permanent sense. This is particularly true of the cultivation of cultural and aesthetic tastes, which not infrequently take precedence over actual physical needs in consumer budgets.¹

The consumer problem is not confined to the allocation of pecuniary income, nor can pecuniary income be taken as a constant, so far as the consumer is concerned. Leisure time and activities not directly related to the

¹ See F. H. Knight, *The Ethics of Competition and Other Essays* (New York, 1935), chaps. i and ii.

expenditure of income multiply and complicate the decisions to be made by consumers. Still more important is the attitude of the consumer toward "work." It is often carelessly assumed that employment or "work" is motivated solely by the desire for income. A moment's reflection reveals that this is true only to a limited extent. Interest in employment, pride in craftsmanship, and an enjoyment of business because of its competitive and sporting aspects are all factors which make "work" in part an end in itself as well as a means to an end.²

The point has already been labored sufficiently to indicate that only in a sense so abstract as to have little meaning does a single objective, such as the desire for maximum economic well-being, motivate consumer behavior. Indeed, it is precarious to assume that there is any simple cause-and-effect relationship between wants and actions, at the consumer level. The most one can say is that, in so far as consumers make conscious decisions between alternative opportunities open to them, they may be assumed to choose the alternative which is expected to come closest to satisfying their most urgent desires. But there is no general way of predicting which kinds of value will be predominant in influencing their decisions.

If these generalizations with regard to human behavior are accepted, it will be evident that waste of resources other than its own is not an outstandingly important practical problem for small consuming units,

² This point has been especially emphasized by Professor Knight (e.g., see *ibid.*, pp. 46-47, 60-66; see also F. H. Knight, *Risk, Uncertainty and Profit* [Boston, 1921], p. 53).

such as the family. This is so because, on the one hand, the family has very little direct control over its surroundings apart from the income at its disposal. On the other hand, the vagueness and multiplicity of consumer objectives makes virtually impossible a significant comparison of the actual with the full range of the possible (i.e., the possible and desirable). One can, of course, point to many instances where avowed objectives are not achieved because of the carelessness or stupidity of the persons in question. These situations might properly be called instances of waste. But their importance is probably not great. More often situations cited as examples of waste prove to be outside the control of the individual or family concerned (and hence are not genuine instances of waste to them); or else they reflect the moral disapproval which one individual has for the tastes or objectives of another. "Bad" taste may be morally or aesthetically repugnant, but it can hardly be called wasteful in the proper sense of the word.

The firm, which is the counterpart in production to the family in consumption, varies much more in size and in the influence which it can exert on its surroundings than does the family. Nevertheless, the objectives of the firm come far closer to being single valued and conscious than the objectives of the family, for its direct aim is to make money (see chap. iii). Waste to the firm, therefore, is more easily definable, even though it may have a very different significance for a small firm than for a large one.

To the extent that one can assume the objective of the firm to be the maximization of expected net revenue,

the problem of waste for any firm becomes determinate as soon as the sphere of action of the firm's planning nucleus is defined. In other words, there is opportunity for waste whenever the firm is in a position to make a choice between better and less good alternatives (in terms, of course, of the attainment of its objective). There are three important fields in which most firms have a choice of alternatives. (1) There is the problem of organization. This includes the selection of the product or products to be produced; the choice of the technical methods of production to be used; and a decision as to the desirable rate of output for the firm based partly on the entrepreneur's knowledge of the cost function of the firm. (2) Opportunities for choice offer themselves in knowledge of, and response to, market conditions. If the entrepreneur is in a purely competitive industry, the problem is somewhat simplified, since he need only inform himself as to the probable course of future resource and product prices. If the entrepreneur is a monopolist or a monopsonist, he must have knowledge of the demand schedules for his product and the supply schedules of the resources which he proposes to use. In addition, he must study the effect of product differentiation and of aggressive sales promotion on demand (in its relation to cost). (3) Entrepreneurs have some choice in the extent to which they abide by the traditions of the firm, the industry, or the social milieu in which they find themselves. Thus within limits accounting techniques, standards of work, the number of shifts per day, personnel relationships, and so on are

subject to the control of the entrepreneur. Frequently tradition, rather than cost and revenue, is accepted as a guide to procedure in these matters.

In connection with each of these fields the range of control varies considerably from firm to firm. Small firms could not consider having expensive cost analyses made; whereas it would be wasteful for certain large firms not to have them made. An entrepreneur in a small business may be unable to afford much time for reading detailed reports on business conditions or the money to purchase them; whereas executives in large firms might be guilty of extravagant waste if they *failed* to keep in touch with general business conditions. In some communities it would be wasteful for a firm not to keep up with the latest developments in scientific management; but in others the customs of the community are so deeply imbedded that any attempt to change them would only arouse antagonisms entirely out of proportion with the economies which would be effected. In short, waste to the firm is measured by the ratio of actual performance to the alternative performance which would be most remunerative.³ The most profitable performance, with which actual performance is compared, does not involve perfect foresight, and hence it does not preclude the possibility of error in judgment. It merely takes for granted that within limits carelessness, sloppy thinking, and neglect in industry are subject to the control of persons in positions of responsibility. It assumes

³ We abstract from the possibility that illegal practices might, at least temporarily, be more remunerative. Laws are accepted as part of the given conditions of all entrepreneurs.

that, without any radical change in the mental capabilities of individual leaders or in the institutional framework which conditions their behavior, significant economies may be made simply through an increased alertness on the part of entrepreneurs to changing conditions and to the basic principles for maximizing returns. Waste can truly be said to exist in firms wherever economies of this sort could be made.

Specific instances of true industrial waste have been dealt with extensively in the literature. The Hoover report on *Waste in Industry*, for example, called attention to a number of economies which could be made in industry without structural changes. Among those mentioned were improved planning and organization and more safety devices for the prevention of industrial accidents.⁴ Others have asserted that industrial efficiency could be increased (i.e., costs could be reduced) by more modern and adaptable accounting techniques, which would give entrepreneurs fuller and more pertinent information on which to base their production policies.⁵ Still others have pointed to the fact that some entrepreneurs could increase profits by paying more attention to diminishing cost functions and to elastic demand schedules.⁶

⁴ Other recommendations which they made referred to more fundamental structural conditions, such as monopoly practices and deficient demand.

⁵ E.g., see K. MacNeal, *Truth in Accounting* (Philadelphia, 1939).

⁶ E.g., see E. G. Nourse and H. B. Drury, *Industrial Price Policies and Economic Progress* (Washington, 1938). As we pointed out in the last chapter, these may be genuine instances of waste, but they do not solve the problem of deficient purchasing power in depressions or the conflict between the private and social interest in monopoly.

This list could be expanded almost indefinitely, but it would not contribute materially to the discussion. The essential point to be emphasized is the fact that industrial waste cannot be discussed or measured in general terms. Behavior which is wasteful for one concern may not be wasteful for another. Each firm presents a separate cost problem. Before it would be possible to say that a particular firm is operating wastefully (i.e., less profitably than it could operate if the entrepreneur were more alert to his job), it would be necessary to investigate the individual problems of that firm. The intensity with which the fixed equipment is operated cannot, at all events, give any indication as to whether or not the firm could operate more profitably under existing conditions of demand and with the existing institutional framework. Unused fixed equipment is more likely to be an indication of past errors in judgment than of wasteful operation; but it may, in some cases, be a symptom of both present waste and bad judgment in the past, or of neither. There is no necessary correlation between unused capital resources and waste, so far as the individual firm is concerned (see chap. iv).

Larger social organizations ordinarily are motivated by more complex objectives than the single firm, and they typically possess at least the potential power to alter environmental conditions far more extensively than does either the family or the firm. Large industrial organizations, such as trade associations, cartels, labor unions, and consumer organizations, fall in this category. But the problems of waste for such organizations are not different enough from the problem of waste for a

single-firm monopoly to make it worth our while discussing them separately. The really crucial wastes to be considered are broad social wastes in the general economic system, which, from the standpoint of action, fall primarily in the province of governments.

There are three levels at which social waste may be considered, assuming for the moment, as we did in the Introduction, that total welfare moves in the same direction as economic welfare and that waste is the ratio of the actual to the ideal. (1) The existing employment of resources could be compared with a "full"⁷ employment of resources. This ratio might be said to measure the wastes of unemployment. (2) Assuming resources were "fully" employed, it would then be possible to compare the output (measured in value units) which could be produced with the then existing structure of resource allocation with the output which could be expected if all resources were allocated in their various uses so that marginal social costs were everywhere equal to price. For the sake of convenience this ratio might be said to measure the wastes of monopoly, since in our discussion earlier we found that monopoly or its equivalent was the chief factor causing marginal cost to diverge from price (see chap. vii). (3) A far more precarious comparison might be made between a hypothetical social dividend which might be produced (assuming "full" employment and "ideal" resource allocation) and the social dividend which would result (assuming, still, the same

⁷ It is not important what definition of "full employment" is used so long as the definition used is precise and unambiguous. One possible definition might refer to resource use when there are no longer any idle persons who are able to work and who are willing to work at prevailing wages.

"ideal" allocation) if income were distributed more equally among consumers. This ratio could be called a "measure of the wastes of unequal income distribution." The gains to be derived from more equal income distribution would presumably, in large part, be made manifest by an increase in consumer surplus.⁸

This classification is convenient methodologically because it divides social waste into stages which can easily be considered separately. But it is a serious oversimplification of the problem, since it does not give adequate consideration to noneconomic values or to the noneconomic costs involved in eliminating waste. Social waste brings up the whole question of how far and by what means a government can or should play a positive and aggressive role designed to promote welfare. We cannot hope, in this discussion, to do more than point out some of the important issues involved.

We have emphasized the fact that waste can only have meaning in connection with environmental conditions which are subject to change by means of conscious human action. What, then, are the environmental conditions falling within the sphere of action of government, and what are the costs of change? Plainly, we may exclude from the realm of government action climatic changes or basic changes in the character of the earth's surface. Natural phenomena may at times prove to be injurious to man's interests and welfare, but they cannot be called wasteful because they are not subject to his control. The only waste which could be associated with natural conditions would have to do with the man-

⁸ See J. R. Hicks, *Value and Capital* (Oxford, 1939), Appen. to chap. ii.

ner in which human activity was adapted to them. In connection with the exploitation of natural resources, however, there is room for human discretion, so that one might properly define what wasteful exploitation would be, providing the social objectives involved were made clear. Similarly, man himself—to the extent that his abilities, health, and tastes are subject to conscious control (and this is a matter to be discussed)—may be considered a “natural resource” capable of wasteful or nonwasteful exploitation. Finally, customary and traditionalized patterns of human behavior, known as social institutions, lie to a greater or a lesser degree within the scope of government action, depending upon the type of government in power.

The attitude which a particular government will take toward these potential spheres of action depends, of course, on the source of its power, the objectives guiding its policy, and the degree of independent authority with which it is intrusted. A tyranny securing and maintaining its authority by means of naked power may exercise many of the same controls as a popularly sanctioned government, but the differences in objective would lead the two types of government to pursue radically different paths. Even if the principle of popular sovereignty is taken as axiomatic, there remain a variety of governmental forms under which, if their advocates are to be given credence, the “good of all” is cherished above everything else.

Although many shades and combinations are proposed, it is possible to distinguish three principal systems of popular government which find support at the

present time: (1) the laissez faire enterprise system, where government would serve largely as a policeman; (2) democratic socialism, in which the agents of production would be publicly owned and operated but where a flexible pricing system would be retained as a means of allocating resources; and (3) an authoritarian economy in which a central body of popularly elected public servants would run the economy, arbitrarily regulating prices and production, presumably in the public interest.

Each of these three types of government would favor, as an ideal, the "full" employment of labor, an allocation of resources such that their marginal products in all uses would be proportional to marginal costs, and a distribution of income with relatively little inequality. Waste, defined as a ratio of the actual to the ideal, therefore, would be the same for all of them. If, however, waste is taken to be a comparison of the actual with the possible, the costs of approaching the ideal must be taken into account. It then ceases to be true that waste has the same meaning for all three forms of government, owing to the fact that in each case noneconomic values are weighted differently as to their relative significance. For this reason the policies of the three types of government would be different even if they were supplied with identical data with which to plan the government activities of the same country at the same moment of time.

Thus, unemployment suggests to persons believing in the tenets of laissez faire that there are serious price rigidities in the economy which are associated with maladjustments of prices and in the allocation of resources.

Their inclination, if they were in a position of authority, would be to diminish government regulations which interfere with competitive price adjustments and to increase the potency of legislation designed to discourage monopoly and other forms of price rigidity. Until these policies had taken their effect, champions of *laissez faire* would advocate granting temporary relief to the unemployed. They would look upon relief as a palliative less injurious to the total welfare than more drastic measures, such as large-scale public works or government investment, which might lead to an abuse of power and to bureaucratization of economic life. The proponents of *laissez faire* would support similar anti-price-fixing policies to insure a desirable allocation of resources among their various uses. In instances where the elimination of monopoly was impracticable because only a limited number of firms of the most efficient size could compete profitably in a given market, they would probably advocate government operation or regulation. The problem of a more equitable distribution of income would be attacked by the supporters of *laissez faire* through graduated income and estate taxes or inheritance taxes.

To the socialist the existence of widespread unemployment gives added force to the argument that the enterprise system must be abandoned. Through the socialization of capital resources it will be possible, say the socialists, to maintain full employment. The socialization of property income would automatically make income distribution vastly less unequal. Other inequalities (i.e., in income received for services) could be elimi-

nated through direct control of wages or through taxation. The maintenance of the pricing system would, it is claimed, help to insure optimum resource allocation. The costs of socialization would admittedly be great, but the socialists argue that these costs would be slight in comparison with the ultimate gains to be derived. They recognize the danger of bureaucracy, of counter-revolution, and of undemocratic usurpation of power by the leaders of the state; but these unpleasant possibilities are looked upon as a lesser evil than the existing abuses of economic power, unequal income distribution, monopoly, and unemployment.

Advocates of a democratic, but centrally planned, economy look upon unemployment as a symptom of the wastes which are inevitable when the productive process lacks central co-ordination. Planners tend to disparage the effectiveness of flexible pricing systems where prices are fixed by market competition as a means of allocating resources or as a means of maintaining full employment. They concede that the substitute which they offer will inevitably lead to the concentration of economic power, but they assert that this would not be an evil if placed in the hands of a democratic government. Government ownership, however, seems to them less important than government control. Like the proponents of *laissez faire*, they would resort to taxation in order to diminish inequalities in income. Planners are optimistic as to the possibility of large-scale government integration of production and distribution even without the aid of a flexible price system. They tend to minimize the danger of excessive concentration of power in the hands

of government officials and the danger of bureaucracy, or at least to feel that these dangers are less significant than the evils of the existing system.

Even from this sketchy survey of alternative approaches to the three levels of economic waste to which we have called attention, it is possible to distinguish the prejudices and differences of emphasis on relative values which lead to different social policies despite fundamental agreement on ultimate objectives. Social waste, thought of as a comparison of the actual with the possible, would not measure the comparative achievements of governments whose judgments as to relative values were different (although such a comparison might well help in the selection of one type of government as opposed to others). Rather it would measure the difference between the actual achievements of one type of government and the achievements which it might have realized had the leaders of the government been more alert to the opportunities open to them and more zealous in carrying out the plans which they themselves devised.

It would be difficult to exaggerate the importance of this distinction between true social wastes, on the one hand, and, on the other hand, a state of affairs which would be considered undesirable from the point of view of a believer in an opposing political philosophy but which is, nevertheless, self-consistent and successful in terms of the objectives of the government which brought it about. "Waste" as we have defined it does not imply an objective value-judgment, whereas a criticism of a governmental form for reasons other than failure to achieve its own stated objectives does necessitate an

outside appraisal of the validity and desirability of these objectives.

It will be observed that the "full" use of capital resources has not been mentioned in our discussion of social waste. The best use of capital resources, from the social point of view, depends on the social objectives chosen the costs of approaching them, the level of employment, the institutional framework, consumer tastes, and the state of the arts. The *best* use of a fixed resource need bear no particular relationship to a measure of its rated capacity based on minimum unit costs to the firm.

CONCLUSIONS

The approach to the problem of waste which we have chosen is open to criticism on two counts. In the first place, it might be pointed out that "waste" defined as "the ratio by which the actual falls short of the possible" would always be zero if the term were defined with rigorous regard for all the forces determining human behavior. That is to say, if all the psychological forces influencing the actions of, say, an entrepreneur were taken into account, as well as all the institutional and other environmental conditions limiting his behavior, the entrepreneur would be powerless to choose any course of action other than the one actually pursued. If a deterministic philosophy were accepted, this criticism would, indeed, be valid. But in that case all discussions of purposive action would be meaningless. A more common-sense approach recognizes the existence of different types of behavior controlled by a variety of forces. It is useful to suppose that certain types of behavior are

subject to the control of individuals or groups of individuals in such a way that conscious choices may be made between available alternatives. It is to that range of controls that we refer when we speak of a comparison between the actual and the possible in connection with any social group.

In the second place, the definition of "waste" which we have developed might be criticized because it is less inclusive than the meaning which is commonly given the term. But this criticism is only partly valid, for waste in its everyday meaning implies moral opprobrium. Moral opprobrium, in turn, suggests guilt. If a party is to be reprimanded for a failure to act, it must be supposed that the ability to act was present. It is, therefore, not unreasonable to conclude that waste carries with it, even in its everyday meaning, the connotation that the group to whom the term is applied has been guilty of a failure to act in the best way compatible with its potentialities.

"Waste" in common usage is sometimes more inclusive than our definition because the achievements of a group with one set of values are sometimes compared with the achievements of a group with a different set of values. We have purposely not included such a comparison in our definition because it seemed useful to emphasize the distinction between a comparison of values and a comparison of achievements with a given set of values and environmental conditions.

"Waste" as it has been defined in this chapter implies unrealized value or satisfaction due to the inattentiveness on the part of the leaders of the group in question

to the interests whose furtherance along established lines was their recognized responsibility. Since a totality of interests is involved, "waste," according to our definition, is a net loss in value or satisfaction rather than the difference between the actual and the ideal in one specialized field of interest. Thus "waste" would indicate the net opportunity for improvement which the group in question might expect as a result of attentive fulfilment of responsibilities on the part of its leaders but without any radical expansion in the sphere of action already opened to it. A broader definition would, of necessity, include to some extent a comparison between an actual situation and a situation which could only be achieved if existing environmental conditions were favorably altered by some *outside* power over which the group in question had no control. "Waste," as we have defined it, would vary in significance, depending on the sphere of action of the social group concerned and the time period in question. The greater the sphere of action and the longer the period of time under consideration, the greater would be the opportunities for waste and for its elimination. But for all groups and for any time interval it could always be thought of as a comparison of the actual and the possible. It would always be a term of reproach used in relation with the objectives of a particular group under discussion. This usage, we would suggest, is more a clarification than an alteration of the everyday meaning of the word.

APPENDIX

NOTE ON *THE THEORY OF IDLE RESOURCES* BY W. H. HUTT

PROFESSOR HUTT'S book, *The Theory of Idle Resources*,¹ was published when this study was still in its early stages. Professor Hutt kindly sent me the galley proofs in order that I might avail myself, as soon as possible, of the work which he had done on a subject so closely akin to my own. To a considerable extent it was necessary for me to cover the same territory which he covered, but we approached the problem of idle resources from very different points of view. This note is written so that the reader may compare the broad outlines of Professor Hutt's analysis with the analysis in this essay. It will be observed that our conclusions are, in most respects, similar, although they were reached by different routes. Obviously, it will be impossible to do full justice to Professor Hutt's work in so brief a sketch.

The Theory of Idle Resources is essentially a classification of the causes and types of idleness in both labor and capital. In constructing a classification Professor Hutt has graded the various types and has introduced a new nomenclature. He suggests that idleness is a condition or a quality rather than a quantity.² Thus, the term "full employment" can only have meaning when it is used to describe an optimum condition.³

The first category to which Professor Hutt refers is that of "valueless resources." In his own words, valueless resources are "those resources which it would not pay to employ, even if no charge were made for their use."⁴ Professor Hutt excludes valueless resources from his definition of idle resources. He recognizes, however, that changing conditions may transform a valueless resource into an idle resource, or vice versa. The category of valueless resources does not have any

¹ London, 1939.

³ *Ibid.*, pp. 35-36.

² *Ibid.*, pp. 30-31.

⁴ *Ibid.*, p. 41.

meaning when it is applied to labor, since labor has no capital value in a free society.

Of the resources which may properly be termed idle in Professor Hutt's classification, there are, first of all, "pseudo-idle resources." Pseudo-idleness is not wasteful. It includes equipment in the process of construction; individuals while they are resting, when they are being educated, or when they are seeking employment; resources which are rendering the service of availability; and so forth. Seasonal employment would ordinarily be considered as a type of pseudo-idleness by Professor Hutt. Pseudo-idleness would exist even in a purely competitive society with stationary conditions. Idleness resulting solely from changing conditions and uncertainty may also be termed pseudo-idleness. In other words, most of the types of idleness discussed in chapter iv of this essay would be called pseudo-idleness by Professor Hutt, idleness due to business cycles being the principal exception.

A third category is called "preferred idleness" by Professor Hutt. It applies to labor alone and refers to persons who, for one reason or another (the reason may be rational or irrational), prefer leisure to work. Since we do not deal with labor in this essay, further reference to this class is unnecessary.

Finally, Professor Hutt refers to a category which he calls "participating idleness," which includes idleness brought about by monopoly or price-fixing. Participating idleness is subdivided into two headings: "enforced idleness" and "withheld capacity." The term "enforced idleness" is used to describe a situation where specialized resources are kept idle because prices are kept too high (i.e., higher than the competitive level) "by legal enactments (fixing prices, or fixing output directly), by physical violence, by threats, by 'moral suasion,' by strikes, by boycotts, or by the use of discriminatory charges."⁵ These specialized resources "have not taken other employment because of some 'participating' right conferred by idleness"⁶ or for some other reason. Specialized resources which are put to some other use or which are permanently discarded are no longer thought of as being idle.

"'Withheld capacity,'" to use Professor Hutt's own words to describe it, "arises when the state or an individual or firm owning a 'natural monopoly,' or a firm uniting the ownership and control of competing resources, or a group of individuals or firms acting in col-

⁵ *Ibid.*, p. 138.

⁶ *Ibid.*, p. 146.

lusion, cut down the output under their control with a view to securing the private benefits of contrived scarcity.”⁷

Either type of participating idleness will usually be accompanied by pseudo-idleness as well. Professor Hutt emphasizes, moreover, that while participating idleness is wasteful it is principally a symptom of more important wastes from monopoly which need not be connected with idleness at all. “The absence of idleness does not imply the absence of waste.”⁸ The more important wastes resulting from monopoly of which Professor Hutt speaks are “(i) ‘diverted resources’ which (whilst specialized) find fields of utilization, and (ii) hypothetical resources (including whose original specialization might have been appropriate but has been destroyed by scrapping) which might have become specialized in the monopolized field but for coercive or voluntary powers of exclusion.”⁹

Professor Hutt’s “participating idleness” was discussed in chapters v, vi, and especially vii.

While the foregoing essay dealt with many of the problems which were taken up by Professor Hutt, and while there is some parallelism and overlapping, we have emphasized in this essay the effect of change and of social institutions on resource use, whereas Professor Hutt, to a large extent, abstracts from change, and he mentions the institutional framework only in passing. Our emphasis, moreover, was focused on waste rather than on idleness. In Professor Hutt’s book the reverse was true. We did not use Professor Hutt’s classification of idle resources because, for our purpose, it did not seem to be appropriate.

⁷ *Ibid.*

⁸ *Ibid.*, pp. 140-41.

⁹ *Ibid.*, p. 141.

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